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AN ECONOMIC ANALYSIS

Part III. Contractor's Reports

E. Financial Capability

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EXPLANATION OF RELEVANCY OF CONCLUSIONS AND DATA CONTAINED
IN THE SST ECONOMIC ANALYSIS REPORTS PREPARED BY THE DEPARTMENT OF COMMERCE

In an effort to provide as complete a history as possible of the course of the SST program, materials consisting of Part I, Executive Summary and Supplements, and Part III, Contractor's Reports*, have been made publicly available. However, all persons using these materials should be advised that the data and conclusions pertaining to the SST designs contained therein are not current and have been superseded by the SST designs submitted to the FAA September 6, 1966, which were the basis for the Economic Feasibility Report prepared by the FAA in April 1967 and for the reports of the Economic Research Contractors submitted December 31, 1966. Using the superseded designs and the related economic data for comparisons with economic characteristics of other aircraft, both American and European, could be misleading and not representative of what was achieved with the more recent SST designs.

Because of the changes in development costs and total program costs and because of the provisions of the Phase III contracts with the airframe and engine manufacturers, the financial data and conclusions contained in the Executive Summary relating to the financial capability of the manufacturers do not reflect their financial capability in the context of the current program or their general financial position.

Accordingly, the materials attached hereto should be viewed as predominately historical in character.

* Part II of the SST Economic Analysis was never issued.

[REDACTED]

SUPERSONIC TRANSPORT FINANCING STUDY

Department of Commerce
Washington, D. C.

[REDACTED]

[REDACTED]

January 6, 1965

[REDACTED]

January 6, 1965

Mr. Abraham Katz, Project Manager
Supersonic Transport Study Group
United States Department of Commerce
Room 5892
Washington, D. C.

Dear Mr. Katz:

We are pleased to submit herewith the report on the practices which have prevailed, from a financial standpoint, in the development, production, purchase, and operation of commercial air transports in the United States during the postwar period. The practices studied were developed and implemented by various airlines, airframe and engine manufacturers, and the financial community both individually and collectively.

The assignment, authorized by the Department of Commerce on October 16, 1964, has been conducted in a manner consistent with our proposal submitted on the same date, as modified subsequently by mutual agreement.

The report, which encompasses the coverage mutually agreed upon, is organized into seven chapters:

- I. Introduction
- II. The Airline Postwar Commercial Transport Market
- III. Postwar Financing Requirements and Methods--Engine Manufacturers
- IV. Postwar Financing Requirements and Methods--Airframe Manufacturers

V. Postwar Financing Requirements and Methods--Airlines

VI. Financial Community Attitudes toward Financing Aircraft Manufacturers and Carriers

VII. Applicability of Past Financing Practices to the SST Program

The findings and conclusions contained herein stem from interviews in each of the sectors, a literature search, and our analysis and judgment on the information derived from both. Supplemental information on the findings and conclusions is contained in the files maintained for this project and is available for your review at any time.

During the course of this assignment, some proprietary information was made available from certain of the companies. In such cases, the information, which is included in the report, has been masked in order to protect the interests and identity of the companies involved. In those cases in which proprietary interests have not been present, identification is made of the companies involved.

Five copies of the report are submitted herewith in the form requested by the Department of Commerce together with the reproducible copy also requested.

We greatly appreciate the opportunity to have been of assistance to the Department in the accomplishment of this challenging and important study and look forward to a continuation of the relationships established during the course of this work.

Very truly yours,

Borg Allen & Hamilton Inc.

FOREWORD

Two studies were conducted to provide historical financial perspective on the domestic and foreign airlines, the U.S. airframe and engine manufacturers, and the U.S. financial community providing funds to the airlines and manufacturers.

The study presented first was conducted by Booz, Allen and Hamilton. It emphasizes the historical financial practices, trends, and patterns of U.S. airlines, manufacturers, and financial institutions.

The second study concerns foreign airlines and was made by the Aviation Advisory Service.

T A B L E O F C O N T E N T S

Page
Number

LETTER OF TRANSMITTAL

I.	INTRODUCTION	1
II.	THE AIRLINE POSTWAR COMMERCIAL TRANSPORT MARKET	5
III.	POSTWAR FINANCING REQUIREMENTS AND METHODS-- ENGINE MANUFACTURERS	9
IV.	POSTWAR FINANCING REQUIREMENTS AND METHODS-- AIRFRAME MANUFACTURERS	15
V.	POSTWAR FINANCING REQUIREMENTS AND METHODS-- AIRLINES	23
VI.	FINANCIAL COMMUNITY ATTITUDES TOWARD FINANCING AIRCRAFT MANUFACTURERS AND CARRIERS	32
VII.	APPLICABILITY OF PAST FINANCING PRACTICES TO THE SST PROGRAM	42

NOTICES

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I. INTRODUCTION

I. INTRODUCTION

The Department of Commerce has been assigned cognizance over a portion of a total study effort undertaken by the federal government to determine how best to proceed with the Supersonic Transport Program.

The Department requested Booz, Allen & Hamilton Inc. to undertake a study of the experience of airlines, airframe and engine manufacturers, the financial community, and affected government agencies in financing all phases of each postwar commercial transport program. This study, authorized on October 16, 1964, was intended to provide a factual basis regarding the practices, trends, and patterns which have heretofore prevailed in the various facets of air transport financing.

The conclusions reached in this portion of the Department's overall effort will be used in a succeeding step, not covered herein, as one of the bases for determining alternative methods of financing the Supersonic Transport Program in each of the sectors involved.

The scope and objectives of the work undertaken by Booz, Allen & Hamilton Inc. are summarized in the following paragraphs so that the contents of the report can be considered in light of the coverage authorized.

1. THE OVERALL EFFORT, DURING A 5-WEEK PERIOD, WAS TO BE DIRECTED TOWARD DETERMINING, TO THE EXTENT POSSIBLE, THE TIME CYCLES AND FINANCING METHODS, PRACTICES, AND ATTITUDES WHICH PREVAILED FOR EACH POSTWAR COMMERCIAL TRANSPORT PROGRAM

The following commercial transport programs were, by mutual agreement, to be used as the basis for determining the time cycles experienced and financing methods employed during the period 1946-1964.

(1) Piston

Two-engine Convair programs (240, 340, and 440 series)

Four-engine Boeing program (377 Stratocruiser)

Four-engine Douglas programs (DC-4, DC-6, and DC-7 series)

Four-engine Lockheed programs (Constellation series)

(2) Turbine

Four-engine Convair programs (880 and 990 series)

Four-engine Boeing programs (707 and 720 series)

Three-engine Boeing program (727 series)

Four-engine Douglas program (DC-8 series)

Two-engine Douglas program (DC-9 series)

Four-engine Lockheed program (Electra series)

It was realized, however, that the depth and quality of information available could vary widely and that, as a consequence, Booz, Allen & Hamilton Inc. would undertake to obtain the data desired on a "best efforts" basis.

2. INITIALLY, THE APPROACH REQUIRED TO OBTAIN THE DATA DESIRED ENVISIONED AN EXTENSIVE INTERVIEW PROGRAM WITH COMPANIES IN EACH OF THE SECTORS INVOLVED WHICH WAS TO BE SUPPLEMENTED BY A LITERATURE SEARCH

The basic approach contemplated initially envisioned an extensive interview program with the principal companies in each sector in order to obtain the required historical data. The parties mutually agreed that the contacts with the various companies involved be made in a manner consistent with a schedule included in the proposal as subsequently modified by provisions of a contract between the parties.

The modified interview schedules referred to were changed during the week of October 26, 1964, to exclude Northwest, United, Lockheed, and Boeing from any contact during the course of the assignment, since these companies were engaged in study activities with the Department of Commerce which were complementary to this effort. The actual interviews conducted and the actual data gathered reflect the four exclusions cited. Each of the actual interviews was handled in a manner consistent with the content of interview outlines, appropriate to each sector, as cleared with Department of Commerce personnel during the week of October 19, 1964.

A literature search, undertaken concurrently with the interview program, was intended to supplement the findings obtained through the direct contacts.

3. THE SCOPE OF THE INTERVIEW PROGRAM REQUIRED THE ACCEPTANCE OF THREE LEVELS OF INFORMATION QUALITY FROM EACH OF THE PARTICIPATING COMPANIES

The data and judgment requests in the interview program were deliberately made inclusive so that the broadest range of coverage possible could be attempted. It was, however, apparent that the 18-year period covered, coupled with the detail requested and the judgments required in some instances, would limit the ability of the respondents to supply precise answers in many cases. As a consequence, a mutual agreement was reached to accept answers of three types:

- (1) Precise answers to those questions whose nature permitted responses of this type.
- (2) Answers in terms of approximate numbers or ranges of magnitude from informed parties in the event that the requested information was not readily available or that its divulgence, in precise terms, either was not necessary or would violate a proprietary interest of the respondent.
- (3) Answers, in the cases of either background or judgment questions, from individuals whose level of prior exposure permitted acceptance of answers on an "informed opinion" basis.

The possibility was also recognized that the various respondents might be either unwilling or unable to answer, on either a factual or an opinion basis, questions on such matters as the effect of

prior military funding on postwar transport programs. In this event, it was agreed that answers to questions of this type would not be pursued once unwillingness or inability to answer was detected.

4. A LITERATURE SEARCH WAS UNDERTAKEN IN ADVANCE OF THE INTERVIEW PROGRAM TO PROVIDE THE MAXIMUM OF FACTUAL DATA FROM PUBLISHED SOURCES AS A BACKGROUND FOR AND POSSIBLE VERIFICATION OF THE INTERVIEW PROGRAM

The purpose of the literature search was to supply an "overview" of the task assigned and an indication of the quality and reliability of published data relating to postwar commercial transport financing practices. The search was also designed to supplement the interview process in the sense of providing a better historical perspective of postwar financing practices than the vagaries of the interview process would permit.

5. ALTHOUGH DIRECT CONTACT WITH FOREIGN CARRIERS WAS EXCLUDED FROM THIS STUDY, AN EFFORT WAS TO BE MADE TO DETERMINE FROM SECONDARY SOURCES THE FINANCING PRACTICES FOLLOWED BY THESE CARRIERS

The effort required to obtain data directly on the financing methods employed by the foreign carriers was extensive and was not, therefore, compatible with the desired completion date of this assignment. As a result, it was mutually agreed to attempt the derivation of this information as a by-product of the interview process with domestic sources and as a direct product of the literature search.

The interview coverage for the airframe and engine manufacturers and the financial community, accordingly, included exploration of the exposure of


each of those sectors to the financing methods employed by the foreign carriers.

6. THE CHANGES MADE IN THE INTERVIEW PROGRAM CONTAINED IN THE INITIAL PROPOSAL CAUSED AN ORIENTATION OF THE STUDY MORE TOWARD THE AIRLINES AND THE FINANCIAL COMMUNITY THAN TOWARD THE MANUFACTURERS

At the outset, equal emphasis, from the standpoint of coverage, was planned for the airframe, airline, and financial community sectors and secondary emphasis was contemplated for the engine and government sectors. The military funding genesis of all postwar engine programs made it inherently difficult, if not impossible, to determine accurately the commercial engine development and production financing requirements. As a result, the quantitative and qualitative results to be anticipated from this sector were thought to be of secondary benefit. Secondary emphasis was also planned for the government sector because of the inherent difficulty in overcoming the security and accounting problems associated with determining the military funding of military programs which were later commercialized.

The interview coverage finally authorized for the airframe sector caused secondary emphasis to be placed on this area, which excluded Lockheed and Boeing for the reason cited. As a result, no direct input can be included in this study from either of the two finalists in the SST airframe competition. These companies, incidentally, were also heavy participants in various of the postwar programs; and one of them, Boeing, apparently is the only manufacturer to show a profit on a commercial turbine transport program.

As a consequence, the primary effort of this assignment was directed toward the financial



community and the airlines. The former group was generally more knowledgeable with respect to the airlines than to commercial transport manufacturers. Thus, the qualitative and quantitative data and conclusions contained herein are heavily oriented toward the airlines and are much more complete, definitive, and accurate with respect to airlines than to airframe and engine manufacturers.

The findings and conclusions of the study are covered in the chapters which follow. The data contained herein are supported by file material in the form of interview notes, analytical work, and the like, which are available for review and use by the Department of Commerce. These files contain material pertinent to each of the sectors studied, including the government sector.

II. THE AIRLINE POSTWAR COMMERCIAL TRANSPORT MARKET

The market for U.S. airframe companies, during the period 1946-1964, totaled in excess of \$7.5 billion, measured in terms of the cost of equipment and initial spares to the airlines. This outlay, which excludes the sales value of commercial transports sold to the military, represents the combined sales volume achieved by the participating airframe and engine manufacturers during the postwar period.

This chapter provides a definition of the total airline postwar commercial transports market broken down into its component programs. The chapter also supplies a breakdown, by program and in total, of equipment purchased by individual airlines and the corollary sales values which accrued to the manufacturers as a result.

1. FROM 1946 THROUGH 1963, AMERICAN AIRFRAME MANUFACTURERS SOLD MORE THAN 7,000 COMMERCIAL TRANSPORTS AND MILITARY DERIVATIVES; OF THESE, 3,200 WERE SOLD TO THE AIRLINES

The total market for American-made commercial transports, including sales to both airlines (U.S. and foreign) and the military, exceeded 7,000 aircraft during the 1946-1963 period, as indicated in Exhibit I, following this page.

The data in Exhibit I also contain the estimated sales value of that portion of the total market represented by airline purchases, measured in terms of the cost of the original airplanes and engines plus initial spares complements. The sales value of military aircraft has been excluded since this study is concerned with the financing of only the airline portion of the total postwar transport market.

The data contained in Exhibit I may be summarized as follows:

- (1) The total sales value of the transports and initial spares, both rotatable and expendable, sold to the airlines of the world since 1946 approximated \$7.5 billion in terms of then-current dollars.
- (2) The airlines of the world acquired 3,200 piston and turbine aircraft as a result of the \$7.5 billion outlay.
- (3) This outlay measured in terms of 1964 dollars approximated \$8.3 billion. The conversion from then-current to 1964 dollars was made through the use of the "total G.N.P. implicit price deflator," as noted in Exhibit I. (Differences between "Total" and "Producers' Durable Equipment" deflators are minor.)
- (4) The value of installed and spare engines is estimated to approximate \$1.2 billion and \$1.4 billion in then-current and 1964 dollars respectively.
- (5) The value of the airframes only, including associated initial spares, is estimated to approximate \$6.3 billion and \$6.9 billion in then-current and 1964 dollars respectively.
- (6) The bulk of the outlays described was made to acquire the types of equipment covered by this study. The types of equipment covered herein, as listed in Chapter I, represent about 96.0% of the total \$7.5 billion acquisition cost listed in Exhibit I.

EXHIBIT I (1)

Supersonic Transport Financing Study

POSTWAR SALES OF COMMERCIAL TRANSPORTS
TO AIRLINES (THROUGH 1963)

(Dollars in Millions)

Company and Model	Unit Sales	Estimated Dollar Value						Years of Delivery	1963 Dollars**		
		Components Cost		Acquisition Cost					Factor	Total Cost	Engines Cost
		Engines	Airframe	Airframe with Engines	Initial Spares	Total					
Commercial											
Boeing											
377	56	\$ 13.0	\$ 71.0	\$ 84.0	\$ 16.8	\$ 100.8	1949-1950	1.33	\$ 134.1	\$ 17.3	
707, 720	344	311.0	1,509.0	1,820.0	344.0	2,164.0	1958-	1.05	2,167.2	326.6	
727	6	4.5	18.3	22.8	4.6	27.4	1964-	1.00	27.4	4.5	
Convair											
240	176	14.0	30.0	44.0	8.8	52.8	1948-1950	1.33	70.2	37.2	
340	209	17.0	108.0	125.0	25.0	150.0	1952-1955	1.18	177.0	40.1	
440	153	12.5	94.5	107.0	21.4	128.4	1956-1958	1.10	141.2	27.5	
880, 990	118	118.0	342.0	460.0	92.0	552.0	1960-1962	1.01	557.5	119.2	
							1962-	1.00			
Douglas											
DC-4	79	6.0	26.0	32.0	6.4	38.4	1942-1946	1.60	61.4	19.2	
DC-6	536	86.0	485.0	571.0	124.0	695.0	1947-1955	1.30	903.5	111.8	
DC-7	107	32.0	150.0	182.0	36.4	218.4	1953-1957	1.15	251.2	36.8	
DC-7B	110	33.0	198.0	231.0	46.2	277.2	1955-1958	1.10	304.9	26.3	
DC-7C	121	36.0	248.0	284.0	56.8	340.8	1956-1958	1.10	374.9	39.6	
DC-8	195	195.0	842.5	1,037.5	207.5	1,245.0	1958-	1.05	1,307.3	204.7	

Company and Model	Estimated Dollar Value									
	Unit Sales	Acquisition Cost					Years of Delivery	1963 Dollars**		
		Components Cost		Airframe with Engines	Initial Spares	Total		Factor	Total Cost	Engines Cost
		Engines	Airframe							
Commercial (cont'd.)										
Lockheed										
049	73	\$ 8.5	\$ 46.5	\$ 55.0	\$ 11.0	\$ 66.0	1944-1947	1.50	\$ 99.0	\$ 25.5
649, 749	133	33.0	92.0	125.0	25.0	150.0	1947-1951	1.33	199.5	43.9
1049	254	76.0	386.0	462.0	92.5	554.5	1955-1957	1.12	621.0	85.1
1649	43	15.0	90.0	105.0	21.0	126.0	1957-1958	1.08	136.1	16.2
L-188	165	99.0	263.0	362.0	72.5	434.5	1957-1961	1.06	460.6	104.9
Martin										
202	43	3.8	6.2	10.0	2.0	12.0	1947-1948	1.38	16.6	8.9
404	101	7.5	42.5	50.0	10.0	60.0	1950-1952	1.25	75.0	18.7
Other*	188	31.5	161.5	193.0	38.6	231.6	1958-	1.05	243.2	33.1
Total, commercial	3,210	\$1,152.3	\$5,210.0	\$6,362.3	\$1,262.5	\$7,624.8			\$8,328.8	\$1,357.1
Military, Direct Sales and Derivatives	3,813									
Total, all programs	7,023									

* "Other" includes Grumman Gulfstream, North American Sabreliner, Lockheed Jetstar, and Fairchild F-27.

** Factor was derived by approximating value of G.N.P. deflator (1963 = 100) during period of program, and taking reciprocal of average thus obtained.

Sources: Department of Commerce special study;

Aerospace Industries Association, "Aerospace Facts and Figures 1964";

Department of Commerce "Economic Indicators";

Booz, Allen & Hamilton estimates.

2. THE \$7.5 BILLION OF POSTWAR COMMERCIAL TRANSPORT
AND INITIAL SPARES PURCHASES WAS DISTRIBUTED
AMONG SEVEN AIRFRAME AND FIVE ENGINE
MANUFACTURERS

An analysis of the distribution of postwar airline commercial transport volume is useful in the determination of the relative level of total financing required by the airframe and engine manufacturers to supply that volume. Exhibit II, following this page, contains an estimate, in both tabular and graphic form, of the sales volume attained by each type of manufacturer for all postwar piston and turbine programs, excluding spares.

The exhibit indicates that a change occurred in the relative position of the airframe manufacturers as the turbine era emerged.

(1) Boeing, the lowest volume commercial piston aircraft producer among the major companies, became the most significant manufacturer of commercial turbine aircraft.

(2) Douglas, the largest producer of commercial piston aircraft, ran a poor second to Boeing in the turbine field.

(3) Convair, the third largest producer of commercial piston aircraft, retained that position in the turbine era.

(4) Lockheed dropped from second to fourth position as the transition from piston to turbine transports occurred.

(5) In the "other" category, Martin dropped out of the transport airframe business after completing its piston programs, while Grumman and

Fairchild entered the transport field in a minor way during the turbine era.

A change, although not of the same magnitude, occurred in the ranking of the engine manufacturers.

(1) Pratt & Whitney, second in the piston era, became the dominant producer of turbine engines.

(2) Curtiss-Wright, the leading postwar piston engine producer, has not participated at all in the commercial transport turbine engine cycle.

(3) Allison and General Electric, neither of whom participated in piston engine programs, have achieved modest penetration of the commercial turbine engine market thus far.

(4) Foreign manufacturers, notably Rolls Royce, participated to a minor degree in the Boeing and Douglas intercontinental model programs as well as being the basic engine supplier in the Fairchild F-27 program.

3. THE MANUFACTURERS AND THE AIRLINES HAVE GONE
THROUGH FOUR DISTINCT EQUIPMENT DESIGN,
PRODUCTION, AND ACQUISITION CYCLES DURING THE
POSTWAR PERIOD, AND A FIFTH IS CONTEMPLATED

The supporting detail for the data contained in Exhibits I and II, as well as the material supplied by the carriers during the course of this study, indicates that four equipment purchase cycles have occurred since the war.

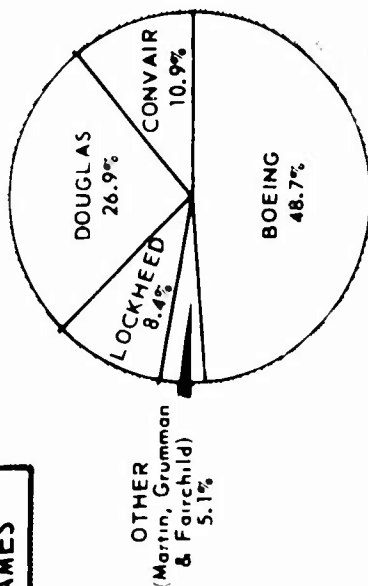
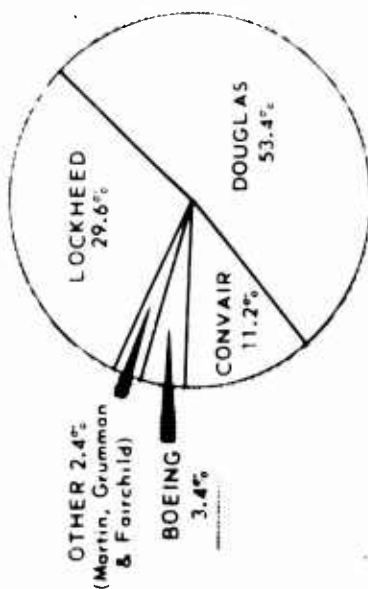
(1) The first cycle included the design, production, and acquisition of these commercial piston engine transports:

EXHIBIT II

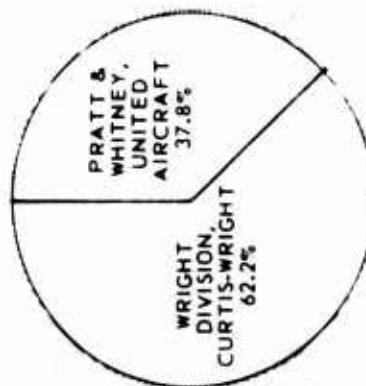
SUPERSONIC TRANSPORT FINANCING STUDY

COMMERCIAL TRANSPORT SALES BY MANUFACTURER
1946 - 1963

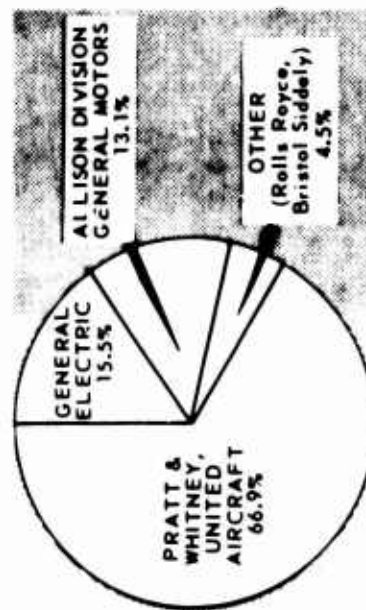
AIRFRAMES



PISTON



TURBINE



ENGINES

CONFIDENTIAL

EXHIBIT II (1)

Supersonic Transport Financing Study

COMMERCIAL TRANSPORT SALES BY MANUFACTURER--
1946-1963

(Dollars in Millions)

Airframes	Piston		Turbine		Total
	Dollars	Percent	Dollars	Percent	
Boeing	\$ 71.0	3.4%	\$1,527.3	48.7%	\$1,598.3
Convair	232.5	11.2	342.0	10.9	574.5
Douglas	1,107.0	53.4	842.5	26.9	1,949.5
Lockheed	614.5	29.6	263.0	8.4	877.5
Other (Martin, Grumman and Fairchild)	48.7	2.4	161.5	5.1	210.2
Total airframe	\$2,073.7	100.0%	\$3,136.3	100.0%	\$5,210.0
Engines					
	Dollars	Percent	Dollars	Percent	
Allison Division, General Motors			\$ 99.0	13.1%	\$ 99.0
General Electric			118.0	15.5	118.0
Pratt & Whitney, United Aircraft	\$ 148.5	37.8%	508.0	66.9	656.5
Wright Division, Curtiss-Wright	244.8	62.2			244.8
Other (Rolls Royce, Bristol Siddely)			34.0	4.5	34.0
Total engine	\$ 393.3	100.0%	\$ 759.0	100.0%	\$1,152.3
Grand total	\$2,467.0		\$3,895.3		\$6,362.3

- . Boeing 377
- . Convair 240 and 340
- . Douglas DC-4, DC-6A, and 6B
- . Lockheed 049, 649, and 749
- . Martin 202 and 404

(2) The second cycle, which also relates to piston engine aircraft, included these transports:

- . Convair 440
- . Douglas DC-7, 7B, and 7C
- . Lockheed 1049 (A-H) and 1649 A

(3) The third cycle, the bulk of which has been accomplished but which is still in process, is the first involving turbine-powered aircraft and includes these transports:

- . Boeing 707 and 720
 - . Convair 880 and 990
 - . Douglas DC-8
 - . Lockheed L-188
- (Excludes the European-made Viscount and Caravelle and the Fairchild and Grumman transports, since each was excluded from consideration in this study.)

(4) The last cycle, also currently in progress and partly overlapping the third, includes these turbine-powered transports:

- . Boeing 727
 - . Douglas DC-9
- (Excludes the European-made BAC 111.)

Exhibit III, following this page, presents a summary, in then-current dollars, of the estimated sales value accruing to the manufacturers from equipment purchased during each of the first two

completed cycles, and the third and fourth cycles as committed through 1963. The exhibit also indicates the value of purchases, during each cycle, by the carriers under review and by airlines in total.

In addition, the likelihood exists of at least a fifth subsonic equipment cycle occurring during the period 1965-1969. This cycle will probably stem from three kinds of requirements and may occur at different time periods:

- (1) Further replacement of piston fleets by jet equipment in the smaller, short-range field with such aircraft as the proposed Boeing 737 and a possible DC-3 replacement.
- (2) Further additions to fleets of present types of equipment (Boeing 707, 720, and 727, Douglas DC-8, etc.) as market growth creates the requirement for more "capacity."
- (3) Possible acquisition of stretched fuselage versions of 707's and/or DC-8's in high-density, long-range routes.

4. POSTWAR TRANSPORT PROGRAMS HAVE REQUIRED THE AIRFRAME AND ENGINE MANUFACTURERS, IN ADDITION TO THE AIRLINES, TO SUPPLY INDETERMINATE BUT NONTHELESS SIGNIFICANT FUNDS FROM INTERNAL AND EXTERNAL SOURCES

The transport programs described have imposed on the companies involved in each of the sectors the need to supply significant amounts of funds from both internal and external sources. Although it has not been possible to determine with any acceptable degree of accuracy the financing requirements of the manufacturers, the size of the airline requirement suggests that the manufacturers also required significant gross financing.

Airframe and engine companies' financing requirements result principally from development costs and the buildup of work-in-process inventories less progress payments received from the airlines. To this indeterminate amount should be added the airline financing need of more than \$7.5 billion. It would thus appear that the companies in the three sectors were required to supply funds in excess of \$10.0 billion to \$12.0 billion in order to finance the postwar commercial transport programs.

III POSTWAR FINANCING REQUIREMENTS AND METHODS-- ENGINE MANUFACTURERS

Transport financing requirements of the aircraft engine manufacturers during the postwar period have been so closely related to prior and concurrent government programs that identification and measurement of the factors in every case is exceedingly difficult. Although this study excludes information from one of the principal turbine manufacturers on its financing needs and practices, it did produce such data from the other turbine manufacturers whose experience can probably be regarded as typical. The study has, in addition, yielded information ancillary to the financing question which should prove of value to the various agencies involved in assessing the SST program.

1. THE TIME REQUIRED TO DEVELOP AN ENGINE PACES OR CONTROLS THE OVERALL TIME SPAN REQUIRED TO DEVELOP A COMMERCIAL TRANSPORT

Exhibit IV, following this page, lists the comparative development times for the engine and airframe combinations in selected transport programs. The data in the exhibit suggest that commercial engine development, in general, begins 1 year ahead of the counterpart airframe.

2. ENGINE PROGRAMS CHARACTERISTICALLY REQUIRE EXTENSIVE PRODUCT IMPROVEMENT INVESTMENTS AFTER QUALIFICATION, THE COST OF WHICH GENERALLY EXCEEDS THAT OF DEVELOPMENT PROGRAM ITSELF

The history of postwar engine development and post-qualification product improvement programs suggests that the latter is more costly and continues over a longer period of time than the former. By way

of illustration, Exhibit V, following Exhibit IV, presents a summary of Pratt & Whitney's experience in this respect for each of its postwar engine programs. The data in the exhibit, supplemented by the interviews, lead to these conclusions:

- (1) Engine companies tend to concentrate during the development period on passing the various running hour tests (a series of static tests wherein the engine is operated over gradually increasing periods of time) leading to qualification.
- (2) This concentration, to some degree, is made at the expense of initial operational reliability and durability, so that both require marked improvement after qualification.
- (3) The cost of improving reliability and durability in the interest of longer times between overhaul has been consistently greater than the initial engine design program in Pratt & Whitney's experience. The data in Exhibit V indicate that product improvement costs are 2 to 3½ times greater than development costs.
- (4) This point is supported by the experience of a second manufacturer. In this case, the company involved is estimated to have committed \$16.0 million to the design and \$24.0 million to the product improvement programs of an engine.
- (5) A third manufacturer expended \$32.0 million on the design and \$33.0 million on the improvement phases of its transport project. In a military predecessor program, the total funding was split equally between two phases.

EXHIBIT IV

Supersonic Transport Financing Study

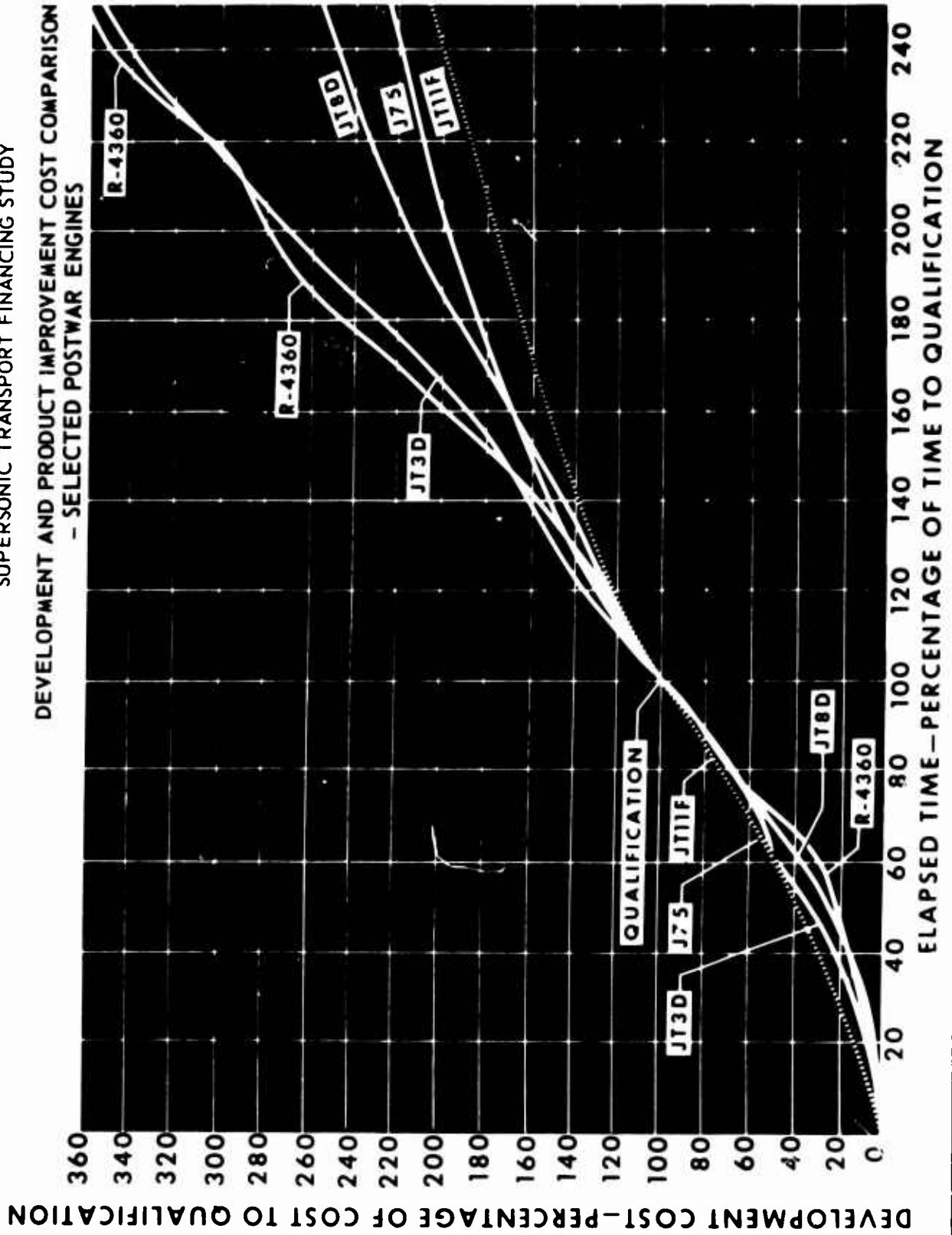
DEVELOPMENT TIMES--
SELECTED AIRFRAMES AND ENGINES

Program (Engine)	Development Time	
	Engine (In Years)	Airframe (In Years)
1. Convair 240 (P&W 2800)	3	2
2. DC-6 (P&W 2800)	3	1 (military derivative)
3. Boeing 707 (P&W J-57)	6	3-1/4
4. DC-8 (P&W J-75)	6	3
5. L-138 (Allison 501-D)	5	3-1/4
6. 880/990 (GE J-79)	5	3-1/4

EXHIBIT V

SUPERSONIC TRANSPORT FINANCING STUDY

DEVELOPMENT AND PRODUCT IMPROVEMENT COST COMPARISON
- SELECTED POSTWAR ENGINES



3. TWO OF THE COMPANIES INDICATE THAT THEY PRICED COMMERCIAL TURBINE ENGINES AT A BREAK-EVEN VOLUME ABOUT TWICE THAT ACTUALLY ATTAINED

The interview process indicated that at least two of the companies experienced difficulties in achieving anticipated volume quantity sales on their respective commercial engine programs.

(1) One of the companies priced its engine program to break even at 1,250 engines. The company actually sold slightly more than 600 engines of these types for use in two transport programs.

(2) The second company priced its engines to break even at 2,400 equivalent engines. The calculation was based on installing 1,600 engines in 400 aircraft plus the sale of the equivalent of 2 spare engines per aircraft (1 engine plus the value of 1 engine in spares). The actual program resulted in the sale of 922 equivalent engines.

(3) It was also determined that the third company priced an engine, currently in production, which cannot break even on the basis of the airframe manufacturer's initially contemplated sales volume of 200 units. This program, which has no military funding, is apparently dependent on selling the engine for other transports in order to produce an overall profit.

The foregoing experience suggests that engine break-even pricing problems stem in large part from the airframe manufacturers, on whose break-even estimates the engine producers rely, and from the lack of aircraft sales to the military to a degree.

4. THE CONSTANT RISE IN BOTH DESIGN AND PRODUCT IMPROVEMENT COSTS SUGGESTS THAT ENGINES NEED TO BE DEVELOPED FOR USE ON MORE THAN ONE COMMERCIAL AND/OR MILITARY AIRCRAFT IN ORDER TO AMORTIZE SUCH COSTS

Each of the engine manufacturers acknowledged the following points:

(1) Engine development and product improvement costs are reported by all three sources to be increasing constantly on more than a straight-line basis.

(2) This situation exists because the combined increases in the cost of engineering talent, material, and facilities have not been offset by program time savings which accrue from experience gained in prior programs.

(3) Because of the foregoing, future engine programs will require higher unit volumes than previously experienced if they are to be profitable.

(4) The higher unit volumes probably cannot, in the light of recent experience, be expected to result from the application of an engine to only one airframe program.

5. THE PRICES CHARGED FOR TURBINE ENGINES, IN PARTICULAR, APPEAR NOT TO REFLECT ASSIGNMENT OF A PRO RATA SHARE OF TOTAL DEVELOPMENT COSTS

Exhibit VI, following this page, indicates that all engines used in postwar transports, except one, were derived from military antecedents.

EXHIBIT VI

Supersonic Transport Financing Study

MAJOR COMMERCIAL ENGINE DEVELOPMENTS-- 1946-1963

<u>Year Introduced</u>	<u>Manufacturer</u>	<u>Commercial Model and Use</u>	<u>Military Antecedent</u>
1. Late World War II	Pratt & Whitney	. R 2800, used in DC-6, 240, 340, 440	. Developed from R 2000 military cargo engine.
2. Late World War II	Curtiss-Wright	. 3350, used in 049, 749	. Exact copy of B-29 engine.
3. 1949	Pratt & Whitney	. 4360, used in 377 Stratocruiser	. Developed from a military fighter engine.
4. 1950 (military) 1953 (civil)	Curtiss-Wright	. TC18-DA, used in 1049, DC-7	. Developed for military P2V program from 3350 basic model.
5. 1953 (military) 1958 (civil)	Pratt & Whitney	. JT-3, used in 707, DC-8	. Developed from military J-57, used in KC-135. . Turbofan version first used in TF-33.
6. 1954 (military) 1959 (civil)	Pratt & Whitney	. JT-4 used in long range 707 and DC-8	. Developed from J-75 supersonic interceptor engine.
7. 1954 (military) 1955 (civil)	Allison Division, General Motors	. 501 used in Electra	. Developed from T56, used in P3V and C130.
8. 1956 (military) 1960 (civil)	General Electric	. CJ 805, used in 880 and 990	. Same as J-79, used in F104, B-58, F11F, F4H, and A3J.
9. 1961	Pratt & Whitney	. JT-8D, used in 727, DC-9, Caravelle	. Developed as a civil program. . Also used in A6 and A4E military aircraft.

(1) Prior military funding of all piston and turbine engine programs, with one exception, has not been reflected on a pro rata basis in commercial engine prices.

(2) An estimate supplied on an informed judgment basis by one of the engine manufacturers suggests that commercial engine prices reflect only about one-third of the total development costs associated with them.

(3) The same point can, in general, be made with respect to the extensive product improvement programs which follow qualification of an engine.

6. THE IMPORTANCE OF MILITARY FUNDING CAN BE DEMONSTRATED BY CITING TWO POSTWAR ENGINE PROGRAMS

The interview process uncovered two case histories which demonstrate the import of military funding on commercial engine programs.

(1) One company's commercial programs benefited from an estimated \$350.0 million in military design and product improvement funding of a prior military program.

(2) The \$350.0 million total was split roughly between development and product improvement, as was the company's investment in the commercial engines derived from the military program.

(3) A second company's commercial engine program benefited from roughly \$150.0 million in prior military design and product improvement funding.

(4) Of the total \$150.0 million, about 40% was required in the development phase and 60% in the product improvement phase.

(5) Although both commercial engine programs described above represent only a part of postwar engine sales, they, nevertheless, may be regarded as indicative of general dependence on military funding. The comments made above support this contention since they indicate that all the postwar commercial engine programs had prior military bases, with the one exception previously noted.

7. THE TWO COMMERCIAL ENGINE PROGRAMS FOR WHICH DATA ARE AVAILABLE ARE ESTIMATED TO HAVE SOLD 1,500 ENGINES AND TO HAVE REQUIRED, IN THE PROCESS, \$145.0 MILLION IN TOTAL FUNDS

Although it has proven impossible to define the gross and net funds for postwar commercial engine programs, estimates of the requirements of two companies in this respect can be supplied as a result of the data gathered.

(1) The net funds, both internal and external, required by an engine manufacturer can be estimated as the sum of:

. The cost to design an engine through the point of qualification less development amortization obtained up to the peak in-process inventory point

. The cost, net of progress payments, to finance peak in-process inventories

The cost of post-qualification product improvement programs, less development cost and product improvement amortization to date

Program losses are excluded from this calculation since sales of engines act as a regenerative device and generally replace, on an out-of-pocket basis, the program losses incurred.

(2) On this basis, one engine manufacturer was required to provide funds, from internal and external sources, in the estimated amount of \$85.0 million.

(3) A second manufacturer was required to provide an estimated \$60.0 million from internal and external sources.

8. BASED ON THE EXPERIENCE OF TWO ENGINE MANUFACTURERS, THE TOTAL FUNDING REQUIREMENTS OF ALL POSTWAR ENGINE PROGRAMS CAN BE ROUGHLY ESTIMATED AT \$700.0 MILLION

In substance, the detailed funding requirements of the engine manufacturers, as they apply to commercial transport programs, could not be determined specifically. It appears, from the foregoing, however, that two of the producers required the equivalent of about 50% of total program sales value to cover the peak funding for in-process inventories plus product improvement requirements, as indicated in Exhibit VII, following this page.

The relationship described is a general one, cannot be supported analytically, and will not necessarily apply from program to program because of the many variables affecting it, but it is the only basis upon which total funding requirements could be approximated in this study.

Using this basis, the total funding from both internal and external sources associated with all postwar commercial engine programs is estimated at roughly \$700.0 million, broken down as shown in Exhibit VII.

9. ISOLATION OF FUNDING SOURCES FOR ENGINE PROGRAMS WAS NOT POSSIBLE, BUT THE LEVEL OF TOTAL FUNDS SUPPLIED BY THE FINANCIAL COMMUNITY TO THE ENGINE COMPANIES WAS DETERMINABLE

The specific sources of financing utilized by the engine companies could not be determined. The requirements for funds by Allison and General Electric, in particular, are minor relative to the total funds required at any point in time by the respective parent corporations. The same is true to a considerably lesser extent of Pratt & Whitney's requirements. The needs for funds and the internal or external provisions made to obtain them are buried, as a result, in total corporate financing programs.

It is possible, however, to supply a broad estimate of the manner in which the total funds required were obtained. This estimate has been based on United Aircraft's financing practices which are presumably influenced to a considerable degree by the needs of its largest division, Pratt & Whitney. This division is estimated to account for close to 75% of the total sales of United Aircraft.

EXHIBIT VII
Supersonic Transport Financing Study
ESTIMATED FUNDING REQUIREMENTS--
POSTWAR COMMERCIAL ENGINE PROGRAMS

(Dollars in Millions)

<u>Manufacturer</u>	<u>Estimated Funding*--Postwar Commercial Engine Programs</u>
A	\$ 60.0
B	70.0
C	420.0
D	<u>140.0</u>
Total	<u>\$690.0</u>

* Including initial spares complement.

- (1) Pratt & Whitney Appears To Have Obtained About 25% of Its Fund Requirements from External Financial Community Sources and the Remainder from Internal Sources and Government Progress Payments

Exhibits VIII and IX, following this page, provide a 13-year history of United Aircraft's cash flow and of its external financing arrangements.

The sources of funds, shown in Exhibit VIII, total \$510.0 million from 1951 through 1963. However, the company did resort extensively to short-term bank borrowings as indicated below:

	Year-End						
	1957	1958	1959	1960	1961	1962	1963
	(Dollars in Millions)						
Bank borrowings (short-term included in working capital)	21.6	37.0	102.5	63.0	18.5	44.0	20.0
Long-term debt	-	-	-	50.0	75.0	75.0	75.0
Convertible debentures	-	-	-	-	-	-	42.9

Total--
year-end borrowing 21.6 37.0 102.5 113.0 93.5 119.0 137.9

The 1963 year-end borrowings, totaling \$137.9 million, also represent the maximum level of external borrowing by the company during the period under consideration.

Bank borrowings reached a maximum year-end level of \$102.5 million in 1959. During 1960, the company issued its first long-term debt in the amount of \$50.0 million and reduced bank borrowings to a year-end level of \$63.0 million.

Presently, \$20.0 million of bank debt is reflected in working capital and carried as a current liability, and \$118.0 million of funds provided by long-term debt and convertible debentures remains as a long-term liability.

The remainder of \$392.0 million is estimated to have been provided by these internal sources:

(Dollars in Millions)	
Returned profits (including capital surplus additions)	\$144.0
Depreciation	197.0
Preferred stock issues	18.0
Other	33.0
Total	\$392.0

- (2) The Manner in Which the \$510.0 Billion Is Estimated To Have Been Applied Yields an Indication of United Aircraft's Financing Pattern

A review of the data contained in Exhibits VIII and IX provides a basis for determining the financial pattern employed by United Aircraft.

Initial development efforts appear to be financed exclusively from retained earnings.

The hardware stage of development and initial manufacturing facilities

EXHIBIT VIII

Supersonic Transport Financing Study

UNITED AIRCRAFT CORPORATION CASH FLOW--1951-1963

(Dollars in Millions)

Sources:	Year-End												Total		
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Profits retained	(8.5)	10.3	11.1	(4.0)	15.5	20.0	(26.2)	21.8	11.3	(.7)	(4.1)	3.9	7.2	58.2	11.4%
Depreciation charges	5.4	8.8	7.0	7.8	11.3	16.2	10.9	23.4	22.8	24.6	17.9	18.5	22.8	197.4	38.7
Long term debt increases:															
Term loans										50.0 ³⁾	25.0			75.0	14.7
Debentures					1.0	16.6 ²⁾				.1			42.9 ⁴⁾	42.9	8.4
Preferred stock	2.7			.2	8.2	1.3	5.5	.7	.1			.1	.1	17.7	3.5
Capital stock	12.6		.4	.8	(7.9)	14.0	57.6	5.9	1.0			1.2	.2	18.9	3.7
Capital surplus ¹⁾			1.4	1.9	.6	.7		.2	1.0	1.1		3.4	1.8	85.8	16.8
Other	1.0	.9												14.0	2.8
Total sources	13.2	20.0	19.9	6.7	28.7	69.4	47.8	52.0	36.2	75.1	38.8	27.1	75.0	509.9	100.0%

<u>Uses:</u>															
Property, plant, and equipment	21.1	30.6	5.0	9.4	14.1	19.0	41.4	38.8	16.8	31.2	19.3	27.6	36.7	311.0	61.0%
Working capital															
increases (decreases)	(9.6)	(12.7)	12.2	(4.6)	13.4	49.6	2.7	6.7	14.2	40.0	7.4	(2.1)	36.4	153.6	30.1
Preferred stock															
retirement	.2	.8	1.1	.5			2.8	2.8	1.0		.1			9.3	1.8
Investments made	1.0	1.0	1.3		1.2	.6	.6	3.2	3.2	3.9	4.2	1.6	.5	22.3	4.4
Other	.5	.3	.3	1.4		.2	.3	.5	1.0		7.8		1.4	13.7	2.7
Total uses	13.2	20.0	19.9	6.7	28.7	69.4	47.8	52.0	36.2	75.1	38.8	27.1	75.0	509.9	100.0%

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investment appears to be financed from a combination of retained earnings and bank borrowings.

The major portion of the facilities investment requirement appears to be financed from a combination of depreciation flow and long-term loans and debentures.

Peak inventories and product improvement efforts appear to be financed through a combination of short-term bank borrowings which were subsequently converted to long-term debts.

The preferred stock issues do not appear to have been a significant element in United's financing pattern.

(3) United Aircraft Has Not Relied on Long-Term Debt until Recently

Exhibit VIII indicates that United Aircraft's balance sheet was free of long-term debt in any form until 1960. In that year, it negotiated the first of two insurance company loans totaling \$75.0 million. It followed, in 1963, with a preferred issue. This issue, which has convertible subordinated features, yielded \$43.0 million.

The use of long-term debt is new to United Aircraft and probably reflects the facilities needs imposed by technologically advanced programs, including the primarily commercial JT 8D program.

On the assumption that the United Aircraft experience, as derived, is reasonably typical, it would appear that about 25% to 30% of the total funds required by the engine companies were obtained from outside sources.

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EXHIBIT IX

Supersonic Transport Financing Study

UNITED AIRCRAFT CORPORATION
CASH FLOW ANALYSIS
(NOTES TO EXHIBIT VIII)

- 1) All adjustments in capital stock and capital surplus reflect adjustments attending stock dividend payments, conversion of preference shares, payment of stock options, and similar transactions. During the period under review, no major common stock issues were sold.
- 2) In 1955 and 1956, two preferred stock issues were sold, as follows:
1. On October 18, 1955, about \$24 million of 4% cumulative convertible preferred was sold through rights on common shares. The proceeds of this sale were used to retire an outstanding issue of 5% preferred.
 2. On September 17, 1956, a new issue of 4% cumulative convertible preference was sold, yielding about \$31.5 million. During this period, most of the preferred issue of 1955 was converted to common.
- 3) During 1960 and 1961, the company issued \$75 million of 5% sinking fund notes to insurance companies and institutional investors. Repayment provisions specify annual retirements of \$3 million commencing in 1965, \$4.5 million commencing in 1971, and \$6 million commencing in 1977.
- 4) Addition preferred stock was issued through a rights offering to stockholders of record on August 5, 1963. This issue, which yielded about \$42.9 million, carried interest at 4-1/2% with convertible subordinated features. Cash dividends are restricted to earnings after December 31, 1962, plus \$25 million plus new common sold or converted.

Note: In addition to long-term borrowings, the company had year-end short-term bank borrowings as follows:

1950	1951	1952	1953	1954	Year-End								
					1955	1956	1957	1958	1959	1960	1961	1962	1963
-	\$26.1	\$21.2	\$11.2	-	-	-	\$21.6	\$37.0	\$102.5	\$63.0	\$18.5	\$44.0	\$20.0

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IV. POSTWAR FINANCING REQUIREMENTS AND METHODS--AIRFRAME MANUFACTURERS

IV POSTWAR FINANCING REQUIREMENTS AND METHODS-- AIRFRAME MANUFACTURERS

The magnitude of the commercial air transport programs of the postwar years has been indicated in total units and in sales values in Chapter II of this report. This chapter presents summaries and analyses of data and findings, developed during this study, which bear on the airframe manufacturers' cash requirements and financial sources used in support of these programs.

The findings and conclusions presented herein have been developed from interviews with only one manufacturer, supplemented by interviews with the financial community and the literature search process. Thus, it has not been possible to identify the specific financing required by each manufacturer for the various postwar commercial transport programs. Some broad guidelines do emerge, however, from analysis of the data that were gathered.

The gross amount of funds required specifically for support of an airframe manufacturer's program for introduction and sale of a new type of commercial aircraft is composed primarily of:

Development costs

Working capital required during the production cycle

Development costs vary in definition among the manufacturers but are generally regarded as cumulative through a period which begins with the "go ahead" signal for early design work and carries through to the prototype or early production stages.

Working capital requirements relate principally to the buildup and maintenance of in-process and finished inventories during the production cycle. There is generally an identifiable point at which these requirements "peak" during the course of a given equipment program.

Gross funds required, then, can generally be regarded as the sum of (1) accumulated development costs and (2) working capital employed--both measured at the time of the peak amount of the latter.

Net funds required can generally be defined as gross funds less down and progress payments made up to the peak working capital point.

The terms and timing of these payments in relation to production and delivery schedules are critical, of course, in the ultimate determination of net funds required.

Other factors bearing on net requirements are

- (1) delivery payments received, prior to the point of accumulation of peak gross requirements and
- (2) ultimate profitability of the program.

The delivery payments received for aircraft delivered prior to attainment of peak in-process inventory levels will reduce the gross funding requirements by the amount, if any, by which down, progress, and delivery payments (i.e., sales values) exceed the out-of-pocket production costs of those aircraft.

This excess (price over out-of-pocket production costs) is a reflection, of course, of ultimate profitability of the total program. In other words, the net reduction (in gross fund requirements) which may be attributable to deliveries, prior to peak

financial requirements, is a function of (1) the number of aircraft delivered and (2) the gross profit per airplane.

Those commercial programs which have their genesis in earlier, military aircraft benefit from prior military funding. Those commercial programs which are anticipated to generate significant military sales, of the same aircraft, benefit from concurrent military funding. The reduction, in gross fund requirements, which may be attributable to either one or both of these circumstances, is difficult to isolate and measure, however.

Later sections of this chapter deal with the methods by which net requirements have been financed by outside sources and with the nature and terms of these financial relationships.

1. THE AIRFRAME MANUFACTURERS' CYCLE FROM EARLY DEVELOPMENT THROUGH PEAK PRODUCTION LENGTHENED MARKEDLY WITH THE INTRODUCTION OF JET TRANSPORTS

As indicated in Exhibit X, following this page, the time cycles for completion of typical piston transports, measured from early development through first service, averaged about 2 years in length. The more complex and technologically advanced jet aircraft, however, required about 4 years for completion of the same cycle.

The 2- to 4-year development cycles listed in Exhibit X are defined to include the work and funds required in:

1. Development engineering
2. Laboratory and component testing

3. Flight testing
4. Wind tunnel testing
5. Mock-up construction
6. Tooling abandoned due to design changes
7. Material development and testing
8. Manufacturers' process and layout development
9. Prototype production (on completion of first production article if no proto-type is manufactured)

2. TURBINE PROGRAMS APPEAR TO HAVE REQUIRED SIGNIFICANTLY LARGER DEVELOPMENT OUTLAYS BY THE AIRFRAME MANUFACTURERS THAN DID THE PREDECESSOR PISTON PROGRAMS

The interview process yielded information on the development costs incurred in two piston and three turbine programs. These costs, supplied below, have been constructed in a manner consistent with the definition of development costs previously noted.

<u>Transport Program</u>	<u>Development Cost</u> (Dollars in Millions)
A - Piston	\$ 18.1
B - Piston	15.5
C - Turbine	216.2*
D - Turbine	180.0
E - Turbine	85.0

*Includes write-offs.

EXHIBIT X (1)

Supersonic Transport Financing Study

DEVELOPMENT AND PRODUCTION CHRONOLOGY-- POSTWAR COMMERCIAL TRANSPORT PROGRAMS

<u>Piston Models</u>	<u>Start of Development</u>	<u>Prototype Flight</u>	<u>Elapsed Time</u>	<u>First Service</u>	<u>Total Elapsed Time</u>
<u>Boeing</u>	-	11/44	-	1949	-
377					
<u>Douglas</u>					
DC-6	8/45	7/46	1 yr.	11/46	1 yr.
DC-6A	1949	9/49	1/2 yr.	4/51	2 yrs.
DC-6B	1949	N.A.	N.A.	4/51	2 yrs.
DC-7	12/51	5/53	1-1/2 yrs.	11/53	1-1/2 yrs.
DC-7B	3/54	N.A.	N.A.	5/55	1 yr.
DC-7C	7/54	12/55	1-1/2 yrs.	4/56	2 yrs.
DC-8	9/55	5/58	2-3/4 yrs.	5/59	3-3/4 yrs.
DC-9	2/63	3/65 (planned)	3 yrs.	2/66	4 yrs.
<u>General Dynamics</u>					
240	3/45	3/47	2 yrs.	6/48	3-1/4 yrs.
340	3/50	10/51	1-1/2 yrs.	3/52	2 yrs.
440	6/55	N.A.	N.A.	2/56	3/4 yr.
<u>Lockheed</u>					
049	1939	1943	-	-	-
749	9/45	3/47	1-1/2 yrs.	9/47	2 yrs.
1049	6/49	10/50	1-1/4 yrs.	11/51	2-1/2 yrs.
1049C	6/50	N.A.	N.A.	6/53	3 yrs.
1049G	6/53	N.A.	N.A.	1/55	1-1/2 yrs.
1649H	9/54	10/56	2 yrs.	5/57	2-3/4 yrs.

EXHIBIT X (2)

<u>Jet Models</u>	<u>Start of Development</u>	<u>Prototype Flight</u>	<u>Elapsed Time</u>	<u>First Service</u>	<u>Total Elapsed Time</u>
<u>Boeing</u>					
707-120	9/54	12/57	3-1/4 yrs.	10/58	4 yrs.
707-320	9/55	1.59	3-1/4 yrs.	8/59	4 yrs.
720	9/56	11/59	3-1/4 yrs.	7.60	3-3/4 yrs.
<u>Douglas</u>					
DC-8 (10)	6/55	5/58	3 yrs.	9/59	4-1/4 yrs.
DC-8 (30)	9/55	11/58	3-1/4 yrs.	4/60	4-1/2 yrs.
DC-8 (40)	-	7/59	-	6/60	-
DC-8 (50)	3/59	12/60	1-3/4 yrs.	5/61	2-1/4 yrs.
<u>General Dynamics</u>					
880	9/55	1/59*	3-1/4 yrs.	5/60	4-3/4 yrs.
990	3/58	1/61*	3-3/4 yrs.	3/62	4 yrs.
<u>Lockheed</u>					
L-188	9/54	12/57	3-1/4 yrs.	1/59	4-1/4 yrs.

N.A. Not applicable
 - Not available
 * Not a prototype flight

The development costs for the first three programs listed pertain to aircraft designed without appreciable benefit of prior military funding. The last two programs did benefit, however, from prior military funding.

The estimated dollar gap between the development cost of a piston versus a turbine program is significant and reflects:

- (1) The significantly higher technological requirement of turbine aircraft and associated equipment, the cause of the preponderance of the increase.
- (2) The impact of inflation, a relatively minor factor as compared to the preceding one.

On the assumption that the experience of the two manufacturers cited is typical, the cost of developing a turbine-powered aircraft with associated equipment has been over 10 times that of piston-powered transports.

It should also be noted that turbine aircraft development costs reflect, to an indeterminate degree, the impact of abnormal design changes caused by lack of complete mastery of the technology involved and by acceptance of many airline orders stipulating customized configurations.

Development costs, piston versus turbine, have increased in a ratio of 1-10, whereas the prices of turbine aircraft have increased in a ratio of only about 1-5. The higher development cost ratio demonstrates the financing effect of more technologically advanced aircraft.

3. IT APPEARS THAT FUNDS REQUIRED IN SUPPORT OF IN-PROCESS AND FINISHED INVENTORY HAVE ALSO RISEN DRAMATICALLY WITH THE ADVENT OF JET AIRCRAFT

An aircraft manufacturer's in-process and finished goods inventory applicable to a specific commercial program will begin to build up during the latter stages of the development cycle and rise steadily to a peak, generally reached 3 to 6 months in advance of the manufacturer's maximum monthly production rate. For example, one manufacturer at a fiscal year-end point reported a peak gross in-process inventory level of \$300.0 million for its turbine aircraft program. This buildup occurred in advance of the company's attaining a peak production rate of 8 aircraft per month some 4 months later.

The inventory level will decline somewhat thereafter to a "normal" level, during the period of principal production. The difference between normal and peak financing depends on such factors as the peak production level, the rate of buildup to the peak point, and the rate at which completed aircraft can be flight-tested and delivered.

The manufacturer who experienced the \$300.0 million gross peak in-process inventory level also supplied similar information on two preceding piston programs. The differences between the funds required to support the respective peak levels is dramatic.

Transport Program Peak Gross In-Process Inventory*
(Dollars in Millions)

A - Piston	\$ 37.0
B - Piston	65.0
C - Turbine	300.0

* Excludes effect on investment of airline progress payments.

Although information from other manufacturers was not obtained on this point, the manufacturer whose experience is quoted is and has been a major factor in the transport field. As such, the experience recounted can probably be considered as roughly typical of that incurred by others. On this basis, then, turbine aircraft require gross peak in-process inventories from 5 to 8 times those required by piston aircraft programs whereas the prices received for turbine aircraft were 5 to 6 times those of the piston era.

4. THE NET INVESTMENT BY THE MANUFACTURER IN PEAK IN-PROCESS INVENTORIES IS, HOWEVER, ONLY ABOUT 50% OF THE GROSS VALUE OF THOSE INVENTORIES

The airframe manufacturer is not required to finance the full amount of the gross peak in-process inventories. The actual investment by the manufacturer is influenced markedly by the cumulative value of airline progress payments in hand and program profitability at the time the peak in-process inventory point is reached.

(1) In General, the Carriers Typically Make Down and Progress Payments Approximating 25% to 33% of Transport Equipment Value, of Which 20% to 25% Is in Hand before the Manufacturer Makes Any Significant Inventory Investment

The typical progress payments (25% - 33%) begin at the time the contract is signed and continue in stages until a point some 6 months prior to delivery of either an individual or the mean aircraft of an order. Although there may be variations from this general pattern, it is nevertheless apparent that progress payments, in the aggregate, can affect substantially the manufacturers' requirements for net investment in in-process inventories. This point is underscored by the fact that up to 80% of the down payments required (20% - 25% of equipment value) are received more than six months in advance of delivery. In other words, at least 20% of the price of an aircraft is in hand before the manufacturer makes any appreciable cash outlay for inventory related to the particular plane(s) involved.

(2) Although the Reduction in Gross In-Process Investment Caused by Progress Payments Is Difficult To Determine, a Reduction Equivalent to 50% in Inventory Investment Appears To Be a Reasonable Estimate

A series of variables (production rates, contract terms, production positions, and the like) make it difficult to assess the investment impact of progress payments. The fact that 20% - 25% of the equipment price is on hand in advance for the equipment to be manufactured during the peak production period

suggests that accumulated progress payments probably amount to at least 50% of the gross in-process inventory value. This estimate was checked with one manufacturer who indicated it to be approximately correct.

5. MANUFACTURERS' FUNDING REQUIREMENTS, NET AFTER DOWN AND PROGRESS PAYMENTS, MAY REFLECT A VARIETY OF ADDITIONAL FACTORS, WHICH ARE DIFFICULT TO FORESEE AND/OR MEASURE PRIOR TO FULL COMMITMENT TO A NEW AIRCRAFT PROGRAM

Each of the transport programs covered by this study encountered some degree of difficulty during one or more of its various phases. It is pertinent to note that in each case these difficulties resulted in some addition to financial requirements in almost every program and in substantial additions in certain programs. The more common sources of difficulty are described briefly as follows:

1. Inadequate break-even estimates of the number of aircraft required to recover program costs--These estimates have generally been optimistic (Electra, DC-8, and Convair 880 and 990 programs, for example).
2. Failure to construct a prototype which, in one case, was in part responsible for extensive and expensive design and production changes (Convair 880 and 990 programs).
3. Design change costs beyond those forecast, which resulted from deficiencies uncovered in either flight test programs or airline operations (Convair 880 and 990, Electra, DC-6, and Martin 202 programs).

4. Lower (than projected) learning curve cost benefits, in at least two cases, which adversely affected inventory requirements and profitability (Convair 880 and 990, DC-8, and Electra programs).
5. Failure to obtain anticipated derivative military orders, which resulted in an increase of fixed cost amortization per aircraft delivered and adversely affected profitability (Convair 880 and 990, DC-8, and Electra programs).
6. Adjustments to initially planned or proposed sales prices as a consequence of competitive reaction which have had, in general, an adverse effect on program and corporate profit-and-loss statements (Convair 880 and 990, 707, and DC-8 programs).
7. A tendency to supply customized configuration without incremental pricing adjustments, again in response to competitive pressures. This situation, when it occurred, adversely affected in-process inventory levels and program profitability (Convair 880 and 990, 707, 720, and DC-8 programs).

These and similar factors have had varying impact on the net funds required, at the maximum point, to support a given program. Some of them--design changes, for example--may be reflected directly and in total amount. Others--unrealistic pricing policies and break-even estimates, for example--are reflected in slowly accumulating increments to the

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funds involved in the program, and their full impact is not realized until the program's conclusion.

Technologically advanced programs appear to be characterized by risks which are inherently difficult to forecast or estimate in advance. The history of the turbine era suggests, in retrospect, that substantial contingent financing requirements should be anticipated and provided for at the time of the "go ahead" on a project of this type.

6. A FINAL FACTOR TO BE CONSIDERED IN ACCEPTING THE NEED FOR CONTINGENT FINANCING PROVISIONS IS THE GENERALLY UNPROFITABLE NATURE OF POSTWAR TRANSPORT PROGRAMS

As indicated in Exhibit XI, following this page, postwar commercial transport programs are reported to have been generally unprofitable to the airframe manufacturers. In one sense, this experience adds another contingency which must be taken into account in financial planning for commercial programs. In another sense, the historical losses represent the combined effect of the realization of various contingencies, including those specified in the preceding section. In any event, this loss experience will have important bearing on the attitude assumed by the financial community in respect to financing, at the manufacturers' level, later generations of commercial aircraft.

(The data contained in Exhibit XI were supplied by the Department of Commerce and adjusted, where appropriate, to reflect the impact of operating results in the years after 1961 (the terminal point of the Commerce material) by data obtained through the literature search and the interview process).

7. MILITARY FUNDING OF COMMERCIAL TRANSPORT PROGRAMS HAS IMPORTANT BEARING ON BOTH PROGRAM PROFITS AND FINANCING REQUIREMENTS

Exhibit XI also indicates that those programs which have enjoyed prior or concurrent military support have been more profitable than those which have not. It is impossible to measure in precise terms the extent to which commercial profits have benefited in those programs related to prior or concurrent military purchases. Nevertheless, the correlation between commercial profits and military participation is so strong, particularly in the turbine era, that programs unrelated to military needs may be regarded as extremely high risk ventures. Certainly, the provision for financing contingencies, as noted earlier, would need to be considerably greater in such cases than if military participation were to be assured.

Those postwar commercial programs which were related to prior or concurrent military programs are indicated in Exhibit XII, following Exhibit XI.

The military business of the manufacturers of commercial transports may have both direct and indirect bearing on net funds required for support of a commercial program. If there has been prior military funding, or if there are to be derivative sales to the military, the funds called for by the commercial program will be lower than would otherwise be the case.

Similarly, the manufacturer's continuing military work, even if not related directly to his commercial program, benefits the latter in terms of sharing overhead, maintaining continuity of employment, etc.

EXHIBIT XI
Supersonic Transport Financing Study

AIRFRAME MANUFACTURERS--ESTIMATED PROFITABILITY--
POSTWAR PROGRAMS (THROUGH 1963)

(Dollars in Millions)

Airframe Manufacturers	Piston Programs (Loss)		Jet Programs (Loss)	
	Sales	Profitability	Sales	Profitability
Boeing				
377	\$ 84	\$ (21)		
707, 720			\$1,820	\$ 100
727			22.8	
Convair				
240	\$ 44	\$ (23)		
340	125	4		
440	107	24		
880, 990			\$ 460	\$ (425)
Douglas				
DC-4	\$ 32	\$ 8		
DC-6	121	(27)		
DC-6A, 6B	450	97		
DC-7	182	47		
DC-7B	231	54		
DC-7C	284	64		
DC-8			\$1,037.5	\$ (300)
Lockheed				
049	\$ 55	\$ (10)		
649, 749	125	(21)		
1049	462	18		
1649	105	(20)		
L-188			\$ 362	\$ (150)
Other	\$ 60	\$ (70)	\$ 193	\$ (139)

EXHIBIT XII (1)

Supersonic Transport Financing Study

MILITARY BASES OF POSTWAR
TRANSPORT PROGRAMS--1946-1963

<u>Year Introduced</u>	<u>Aircraft</u>	<u>Manufacturer</u>	<u>Military Base, if Any</u>
1946	DC-6	Douglas	. Utilized DC-4 wing design.
1946	049 (Constellation)	Lockheed	. Civil model of late war transport. . Used B-29 engines.
1948	240	Convair	. No military base.
1948	749	Lockheed	. Modification of 049.
1949	377 (Stratocruiser)	Boeing	. Modeled after B-29. . First version was YC-97 transport.
1951	340	Convair	. No military base. . No significant production.
1953	1049 (Constellation)	Lockheed	. Longer range Constellation, with supercharged engines from P2V.
1953	DC-7	Douglas	. Developed from DC-6. . No direct military base.
1955	440	Convair	. No military base.
1957	1649 (Constellation)	Lockheed	. Developed from 1049. . No direct military base.
1958	L-188 (Electra)	Lockheed	. No military development base. . Modified to P3Y for Navy.

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EXHIBIT XII (2)

<u>Year Introduced</u>	<u>Aircraft</u>	<u>Manufacturer</u>	<u>Military Base, if Any</u>
1958	707, 720	Boeing	. Developed from KC-135.
1959	DC-8	Douglas	. No military base.
1960	880/990	Convair (General Dynamics)	. No military base.

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The extent to which the postwar commercial transport programs have benefited (in terms of profit or reduced financing requirements) from direct or indirect relation to military business cannot be isolated for a variety of reasons, including.

- . The inherent difficulty in determining the degree of application of a military development program to a corollary commercial program
- . The lack of precise cost accounting and cost allocation systems which would permit some degree of benefit determination to be made
- . A general disinclination on the part of manufacturers to estimate and define the degree of benefit obtained in this respect

As a consequence, it has been necessary to estimate, on a broad basis, the commercial funding required by each of the airframe producers under study, based largely on the experience of one manufacturer, as noted earlier in this chapter.

8. THE FINANCING REQUIREMENTS OF AN AIRFRAME MANUFACTURER TYPICALLY RELATE PRINCIPALLY TO ITS GOVERNMENT BUSINESS

As indicated in Exhibit XIII, following this page, the major airframe manufacturers' total volume over the past 10-12 years has consisted largely of government business. In only three of these years has any of the three manufacturers realized less than 75% of total sales from defense and aerospace agencies. More typically, government business has accounted for 85%-90% of the total.

The manufacturer's need for total funds, therefore, has been basically a reflection of the level of its government-oriented activity. It is extremely difficult, furthermore, to identify that part of its cash flow, other than from sales or progress payments, attributable to or planned for commercial programs.

9. A GENERAL FINANCING PATTERN FOR MANUFACTURERS' COMMERCIAL PROGRAMS CAN BE TRACED, HOWEVER, BASED ON OVERALL PATTERNS AND ON QUALITATIVE OBSERVATIONS

Interviews with one manufacturer and with representatives of the financial community, together with analyses of manufacturers' cash flow (as shown in Exhibit XIV, following Exhibit XIII) and historical balance sheets from published sources, indicated that the funds for commercial air transport programs, at various stages of the program, are generally derived as follows:

(1) Early Development Stages Are Supported Entirely by Internal Cash Flow and the Manufacturer's Own Working Capital

In another sense, the program, during this period, may be regarded as entirely dependent on the company's own equity, as if it had no debt.

(2) Later Development Stages, when Accumulated Costs Have Attained Sizeable Proportions, May Be Regarded as Supported to a Minor Extent by Outside Borrowings

In a quantified sense, this outside support might be measured as the excess of all borrowings over those required solely to support the company's government business.

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EXHIBIT XIII

Supersonic Transport Financing Study

PERCENT OF GOVERNMENT SALES TO TOTAL
SALES--SELECTED AIRFRAME MANUFACTURERS

	<u>1950</u>	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Boeing	89%	N.A.	89%	88%	75%	80%	85%	N.A.	97%	75%	N.A.	78%	76%	85%
Lockheed	69	83%	89	91	87	80	83	76%	86	78	90%	89	97	90
Douglas	87	77	87	92	82	92	80	64	74	87	54	63	77	78

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EXHIBIT XIV (1)

Supersonic Transport Financing Study

CASH FLOW ANALYSIS--SELECTED AIRFRAME
MANUFACTURERS--1951-1963

BOEING CO.--CASH FLOW--1951-1963
(Dollars in Millions)

	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:															
Profits retained	3.9	(11.8)	14.6	2.4	11.1	3.2	20.3	4.3	.2	21.9	22.1	11.2	4.8	108.2	21.9%
Depreciation charges	1.1	1.5	2.5	3.7	4.5	5.9	12.2	18.5	18.5	25.8	17.7	19.2	17.5	148.6	30.1
Long-term debt increase	1)							70.4 ²⁾				.5	50.1 ³⁾	121.1	24.5
Common stock		21.7		24.8	1.0	23.9	9.9	18.5	6.7	6.6	.3	.2	.7	114.3 ⁴⁾	23.2
Other	—	—	—	—	.4	—	—	—	.2	—	.6	.2	—	1.4	.3
Total sources	5.0	11.4	17.1	30.9	17.0	33.0	42.4	111.8	25.6	54.3	40.7	31.3	73.1	493.6	100.0%
Uses:															
Plant and equipment	5.0	6.5	7.6	4.3	7.0	30.5	44.8	16.2	16.9	36.5	15.2	47.9	23.9	262.3	53.1%
Increase (decrease) in working capital	(.2)	4.9	9.5	26.6	10.0	2.5	(2.4)	93.8	6.2	3.2	(20.8)	18.0	46.1	197.4	40.0
Debt retirement														5.9	1.2
Other (includes long-term notes and leased aircraft)	.2	—	—	—	—	—	—	1.8	2.5	14.6	40.4	(34.6)	3.1	28.0	5.7
Total uses	5.0	11.4	17.1	30.9	17.0	33.0	42.4	111.8	25.6	54.3	40.7	31.3	73.1	493.6	100.0%

BOEING CO.--CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XIV (1))

- 1) During the period 1950 to 1955, the company used occasional short-term borrowings from banks. These loans were off the books by year-end, with the exception of 1951 when \$31,190,000 was carried into 1952 and liquidated prior to December 31. Starting in 1956, year-end bank short-term borrowings were as follows:

<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
(Dollars in Millions)							

\$11.55 \$110.0 \$98.0 \$98.0 \$15.3 - \$66.6 \$37.1

- 2) On July 16, 1956, two debenture issues were floated, as follows:

1. 5% senior debentures--\$40.0 million
2. 4-1/2% convertible subordinated--
\$30.6 million

Principal covenants of this issue restrict cash dividends to earnings after December 31, 1957, plus \$10 million plus amount of new stock issued. Also, future debt is restricted by provision that net tangible assets must equal 275% of consolidated funded debt

- 3) During 1963, an additional \$50 million of 5% notes was sold, repayable in installments of \$2.750 million annually between 1966 and 1982. Covenants under issuance of these notes restricted dividend and subordinated debt

repayment by requiring, among other things, that working capital be equal to 120% of funded debt.

- 4) Additions to common stock reflect adjustments accompanying stock splits, stock dividends, stock option sales, and debenture conversions. No major stock issues took place during the period under review.

DOUGLAS AIRCRAFT CO.--CASH FLOW--1951-1964
(Dollars in Millions)

	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:															
Profits retained	2.7	6.3	10.8	20.8	13.5	18.4	15.8	1.2			6.0	6.3	6.3	108.1	33.0%
Depreciation charges	1.3	2.6	3.2	3.6	5.0	5.0	7.3	11.0	11.8	5.7	8.6	4.8	7.0	76.9	23.4
Long-term debt increase:															
4% convertible subordinate debentures														27.9	8.5
5% sinking fund debentures															
Space Systems Center notes								60.0						60.0	18.3
Purchase money trust deed											9.1			9.1	2.8
Total long-term debt increase			1)				27.9 ²⁾	60.0 ³⁾			9.1 ⁴⁾		23.0 ⁵⁾	120.0	36.6%
Other assets, liquidated					.4							.6		1.0	.3%
Tax payments deferred									2.7			.9		3.6	1.1
Capital stock:															
Book value			.1	.6		.2		.9				1.0	1.6	4.4	1.3
Paid in capital				.8		.1		5.5				2.9	3.8	13.1	4.0
Reserves liquidated										.9				.9	.3
Total sources	4.0	8.9	14.1	25.8	18.9	23.7	51.0	78.6	14.5	6.6	23.7	16.5	41.7	328.0	100.0%

EXHIBIT XIV (4)

DOUGLAS AIRCRAFT CO.--CASH FLOW--1951-1964
(Dollars in Millions)

	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Investment in facilities	10.3	7.3	9.5	9.7	5.8	18.6	25.5	11.9	7.2	(4.2)	15.4	7.8	32.0	151.8	46.3%
Increase (decrease) in working capital	(6.6)	1.3	9.1	15.3	13.1	5.1	22.9	66.4	(30.5)	(35.1)	(1.8)	4.3	(5.1)	58.4	17.8
Debt repayment											.7	4.4	5.5	10.6	3.2
Losses incurred									37.6	19.5				57.1	17.4
Investments in other assets	.3	.3	.5	.8		2.6	.3	.2	.2	26.4	7.3		7.5	46.2	14.1
Reserves established											.9			.9	.3
Deferred taxes paid											1.2		1.8	3.0	.9
Total uses	4.0	8.9	14.1	25.8	18.9	23.7	51.0	78.6	14.5	6.6	23.7	16.5	41.7	328.0	100.0%

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DOUGLAS AIRCRAFT CO.--CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XIV (3))

- 1) During the period 1951 to 1953, the company drew on bank credit lines to finance development and production of the DC-7 series. These borrowings were unsecured, were at the prime rate, and never approached the \$100 million maximum available.
- 2) In 1956-1957, additional funds were raised by issuance of debentures and reestablishment of a bank credit line.
 - . A bank line of \$110 million was established in 1956.
 - . In 1957, \$27.9 million of convertible subordinated debentures were issued at 4%, and bank credit lines were increased to \$150 million, with interest at the prime rate. The indenture attending the debenture issue restricted approximately \$106.2 million of total retained earnings of \$137 million from cash dividend payments.
- 3) In April 1958, an issue of 5% sinking fund debentures, totaling \$60 million, was sold. A portion of this issue was used to reduce bank borrowings; however, the company's bank credit line was increased to \$200 million against anticipated future requirements. Under the most restrictive of the indentures relating to the two issues, all but \$22,527,218 of the company's retained earnings was restricted from distribution to stockholders.
- 4) During 1961, purchase of property at Long Beach was partially financed by a 5% purchase money trust deed note issued to the government for over \$10 million and payable over a 10-year period at \$253,784 per quarter.
- 5) During 1963, the company issued \$23 million of 5-1/2% notes to insurance companies to finance the acquisition of the Douglas Space Systems Center, Huntington Beach, Calif. These notes are payable \$469,378 quarterly to January 1984, and are secured by a mortgage on the Space Systems Center. During 1963, bank borrowings were eliminated, and a \$100 million line of credit was left unused.

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EXHIBIT XIV (6)

GENERAL DYNAMICS CORP.--CASH FLOW--1951-1963
(Dollars in Millions)

	Year-End											Total			
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:															
Profits retained (retained earnings)	2.7	2.8	34.2	13.4	19.1	18.7	42.4	17.1	2.1			52.9	86.0	291.4	30.8%
Depreciation charges	.6	.9	17.5	2.4	13.2	5.2	36.5	11.7	50.7	25.8	27.1	37.8	52.5	281.9	29.8
Notes issued			7.8				5.8	74.2	55.0					142.8	15.0
Debentures issued					40.0									40.0	4.2
Mortgages and other (purchase agreement)	3.3				8.2	2.2	.6		9.7		2.3	1.1		27.4	2.9
Preferred stock									51.6					51.6	5.4
Common stock	(.5)	.1	3.5	.6	7.3	(6.1)	1.5	.7		.1				7.2	.8
Capital surplus	.9	.3	10.5	8.2	4.1	10.3	39.1	32.0	1.1	1.3	(15.8)			92.0	9.7
Minority interest	.1	.1	.1		.1	.1	.7	.2	(.1)		(.1)		12.0	13.2	1.4
Total sources	7.1	4.2	73.6	24.6	92.0	30.4	126.6	135.9	170.1	27.2	13.5	91.8	150.5	947.5	100.0%

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GENERAL DYNAMICS CORP.--CASH FLOW--1951-1963
(Dollars in Millions)

	Year-End												Total		
	1951	1952	54	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent	
Uses:															
Land and buildings	.4	.9	27.8	3.2	34.4	23.1	102.8	30.2	91.8	34.3	28.5	15.8	71.7	464.9	49.1%
Increase (decrease) in working capital	3.8	2.7	40.3	4.8	57.9	7.4	3.5	79.7	49.4	(43.2)	(172.2)	78.4	60.3	172.8	18.2
Debt retirement:															
Notes				7.8								2.5	21.5	31.8	3.4
Debentures					.2	13.0	26.8							40.0	4.2
Mortgage		.2	.2	.2			.4		7.5				1.3	10.0	1.1
Plant purchase															
agreement	3.1			.6	1.3	.8								5.8	.6
Preferred stock			.5	7.9						10.0				18.4	1.9
Losses incurred									42.0	145.7				187.7	19.8
Other assets	(.2)	.4	4.8	.7	(.5)	(.9)	6.0	(2.0)	28.9	(13.4)	1.5	(4.9)	(4.3)	16.1	1.7
Total uses	7.1	4.2	73.6	24.6	92.0	30.4	126.6	135.9	170.1	27.2	13.5	91.8	150.5	947.5	100.0%

LOCKHEED AIRCRAFT CORP.--CASH FLOW--1951-1963
(Dollars in Millions)

	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:															
Profits retained	3.3	1.2	7.2	9.7	8.8	2.5	9.2	11.1	.7	(48.3)	21.5	41.0	29.3	97.2	24.8%
Depreciation charges	1.1	2.7	3.4	4.2	5.1	6.4	8.9	11.5	12.3	11.3	15.4	14.7	9.3	106.3	27.3
Long-term debt increases:															
4.5% debentures				1)		30.0 ³⁾	4)							30.0	7.7
3.75% debentures					30.0 ²⁾									30.0	7.7
Capital stock	1.2	.2	.2	.1		.2		.2	4.0	.2	.3	.2	2.8	9.6	2.5
Additional capital	(.4)	5.1	3.8	6.0	.1	6.2	.1	9.4 ⁵⁾	5.5	4.5	6.5	4.4	.5	51.7	13.3
Other	3.4	2.0			2.1		1.4			31.5 ⁶⁾	5.6	6.3	1.5	53.8	13.8
Investments liquidated	1.8										4.0	4.5		11.3	2.9
Total sources	10.4	11.2	14.6	20.0	46.1	45.3	19.6	32.2	22.5	(.8)	54.3	71.1	43.4	389.9	100.0%

LOCKHEED AIRCRAFT CORP.--CASH FLOW--1951-1963
(Dollars in Millions)

	Year-End													Total	
	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>Dollars</u>	<u>Percent</u>
Uses:															
Property, plant and equipment	7.1	6.2	5.8	6.6	14.7	19.3	16.8	14.2	21.0	12.7	23.5	27.0	19.3	194.2	49.87
Increase (decrease) in working capital	3.3	4.7	6.9	10.5	31.4	23.3	(1.9)	(1.3)	(29.5)	(18.0)	23.0	39.5	20.1	112.0	28.7
Long-term debt retirement:															
4.5% debentures						1.8	.1	9.8	6.5	1.9	1.8	1.9	1.9	7.5	1.9
3.75% debentures								.9	4.8	1.8	5.1	2.7	1.5	27.5	7.1
Investments made													.3	7.8	2.0
Other		.3	1.9	2.9		.9	4.6	8.6	19.7	.8	.9		.3	40.9	10.5
Total uses	<u>10.4</u>	<u>11.2</u>	<u>14.6</u>	<u>20.0</u>	<u>45.1</u>	<u>45.3</u>	<u>19.6</u>	<u>32.2</u>	<u>22.5</u>	<u>(.8)</u>	<u>54.3</u>	<u>71.1</u>	<u>43.4</u>	<u>389.9</u>	<u>100.07</u>

LOCKHEED AIRCRAFT CORP.--CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XIV (8))

- 1) During the period 1950 to 1955, the company neither issued nor had outstanding any long-term debt. During this period, the company made limited use of short-term bank borrowings, especially during the Korean War period. Year-end balances of current bank borrowings were as follows:
- | <u>1950</u> | <u>1951</u> | <u>1952</u> | <u>1953</u> | <u>1954</u> |
|-----------------------|-------------|-------------|-------------|-------------|
| (Dollars in Millions) | | | | |
| - | \$30.0 | \$46.0 | \$30.0 | - |
- 5) Additions to capital account resulted from conversion, over time, of shares of 3-3/4% convertible subordinate debentures to common, and from changes resulting from acquisitions.
- 6) A deferred development account in the amount of \$31.5 million was written off against profits, in part causing a considerable loss for the year's operations.

- 2) On May 25, 1955, an issue of 3-3/4% convertible subordinated debentures was sold to yield approximately \$30 million of long-term capital.

- 3) On May 23, 1956, an additional issue of \$30 million, 4-1/2% debentures was sold. Future borrowings were restricted by a covenant requiring tangible assets less current liabilities to equal 225% of funded debt.

- 4) During the period 1957 to 1963, additional funds were provided by bank short-term borrowings, with year-end balances as follows:

<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
(Dollars in Millions)						
\$25	\$80	\$75	\$70	\$50	\$40	-

V. POSTWAR FINANCING REQUIREMENTS AND METHODS--AIRLINES

(As noted in Chapter VI, however, commercial business, at this stage, is generally given very little weight by institutional lenders as a "bankable" asset.)

- (3) The Production Cycle Is Supported by (1) the Manufacturer's Own Working Capital,
(2) Progress Payments from the Airlines,
and (3) Increasing Amounts of Short-Term (Line of Credit) Loans

In this case, the lenders give greater and greater weight to firm orders and commitments, from the airlines, as validating the liquidity of the manufacturer's in-process inventories and advances to vendors.

The production cycle may also be regarded as supported by a minor portion of the manufacturer's long-term debt, if any. On a purely theoretical basis, the amount of support from this source might be measured by the extent to which total long-term debt exceeds the long-term debt which might have been granted had the company been entirely, or planned to be entirely, in government work.

During the period under review, the manufacturers' equity base, required for conduct of both government and commercial business, has grown almost entirely through retained earnings. Issues of common stock or equity-equivalent, senior securities have been in relatively minor amounts.

10. SUPPLIER CREDIT OR ASSISTANCE TO AIRFRAME MANUFACTURERS IS EMERGING AS A POTENTIAL FINANCING DEVICE

Douglas, in its DC-9 program, has been relying to a moderate extent on financial support, or the equivalent, from some of its major suppliers during the development stages and on into the production cycle. The success of this method of financing has not yet been fully demonstrated and its continuing acceptance may well depend on the ultimate profitability of the DC-9 program, in total. At this point, however, supplier credit can only be regarded as a potential source of financing for airframe manufacturers.

* * * *

In summary, the airframe manufacturers have been required to provide increasing amounts of funds to support technologically advanced aircraft development. The development costs are financed mainly from internal sources of funds. The production cycle is financed by a combination of working capital, airline progress payments, and short-term (line of credit) loans.

EXHIBIT (1)

Supersonic Transport Financing Study

AMERICAN AIRLINES--
CASH FLOW--1951-1963

(Dollars in Millions)

	Year-End												Total		
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
<u>Sources:</u>															
Profits retained	5.9	8.0	8.9	11.0	29.7	17.2	2.9	9.9	17.2	3.2	(.8)	.6	10.5	124.2	15.7%
Depreciation charges:															
Flight equipment	10.0	13.3	16.2	16.1	14.4	11.2	13.5	13.9	(5.2) ¹⁾	14.3	17.9	28.7	2.0	166.3	21.1
Ground equipment	.8	1.3	1.4	2.0	1.6	2.7	1.8	2.8	3.8	3.4	2.6	2.2	3.7	30.1	3.8
Long-term debt increases							39.9 ²⁾	9.4 ³⁾	137.9 ⁴⁾	13.4 ⁵⁾	84.2 ⁶⁾	25.9 ⁷⁾		310.7	39.5
Tax payments deferred				2.7	2.9	3.0	3.5	9.6	2.5	10.0	9.6	12.8	14.7	71.3	9.0
Investments liquidated	14.7	1.6	6.2	6.0					11.1		16.2	17.1		72.9	9.2
Common stock				.1	1.0	.3		.1	.2		.1			1.8	.2
Other		.6	.7	.2	.2	1.4	.1				1.4	6.9	.7	12.2	1.5
Total sources	31.4	24.8	33.4	38.1	49.8	35.8	61.7	45.7	167.5	44.3	131.2	94.2	31.6	789.5	100.0%

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V. POSTWAR FINANCING REQUIREMENTS AND METHODS--
AIRLINES

The requirements for funds by the airlines which stemmed from acquisition and integration of American-made postwar transport equipment are more readily determinable than were the funds required by the engine or airframe manufacturers.

The availability of published information, coupled with direct interviews with the carriers, permitted the development of a more precise picture of fund requirements and the methods used to obtain them.

1. THE TOTAL FUNDS REQUIRED BY THE AIRLINES DURING THE POSTWAR PERIOD ARE THE SUM OF FOUR ELEMENTS OF INVESTMENT

Four distinct elements of investment are required of an airline during a transport acquisition program.

(1) The Total Sales Value to the Airframe Manufacturer Represents by Far the Major Portion of the Cash Outlays

The first investment made by a carrier is the acquisition of the aircraft and initial spares. The total amount of this type of investment by the carriers was some \$7.5 billion, as shown previously in Exhibit I. following page 5. The data, as previously shown, also indicated that some 3,200 transports were acquired by the world's airlines.

(2) The Second Investment Is Required To Train Flight Crews and Maintenance Personnel in the Operation, Overhaul, and Maintenance of New Equipment

The acquisition of new equipment requires that a carrier train flight crews in its operation and that it also upgrade the qualifications of other crews in order to fill the seats vacated by the crews trained in the new equipment.

Likewise, an outlay is required in order to train maintenance, engineering, ground service, and overhaul personnel in the requirements imposed on each by the new equipment.

(3) Carriers Are Frequently Required To Make an Investment in Facilities and Equipment in Order To Maintain and Service New Aircraft

Airlines may also be required to construct new facilities to overhaul and maintain technologically advanced, new flight equipment. Each of the major carriers has, for example, made investments of this type as part of the integration of turbine equipment.

The carrier may also be required to purchase or lease ground equipment in order to service a new type of aircraft. In this case, such items as loading bridges, jet engine starting vehicles, tail de-icing cranes, and similar items could be required.

(4) The Final Type of Investment Arises from the Costs Associated with Introduction to Passenger or Cargo Service of New Equipment

Each new postwar transport program has been accompanied by a series of costs associated with the introduction of new equipment. The carriers have been required, among other things, to provide for initial marketing and advertising efforts and press flights, and to absorb the effect of schedule diversions, changes in turnaround times, equipment downgrading, shorter overhaul periods, and the like caused by the new equipment.

The costs associated with training, facilities, and equipment acquisition and service introduction have, for purposes of this study, been defined as "integration" costs. An effort was made during the course of this assignment to determine the integration costs incurred by the carriers during the postwar period. Information was obtained from two of the carriers on costs of this type. Subsequent analysis of this material and discussion with other carriers lead to the determination that: (1) the carriers have not segregated all of the integration costs, as defined above, from costs of a similar nature incurred during normal operations, (2) in those cases where integration costs were segregated, the carriers included only the capital portion of such costs, and (3) there are substantial differences and inconsistencies among the carriers in the manner in which such costs are handled. In summary, the information obtained on integration costs represents only a part of the actual costs incurred and provides an inadequate base from which to estimate the total integration costs actually incurred by all of the world's carriers.

The information obtained is adequate enough, however, to demonstrate that the airlines incur a sequential investment over a 3- to 4-year period for every sizable purchase of new equipment. The investment required is a significant one, a point which is underscored by the data on the following table which were computed from the data available.

	Trunk Carrier (1951-1963)	
	American	TWA
	(Dollars in Millions)	
Equipment cost*	\$677.0	\$673.0
Integration costs (as segregated)	52.4	69.2
Integration as a percent of gross equipment costs	8.0%	10.3%

*Includes transports, initial spares and assemblies, and spare engines.

The actual costs incurred in integrating new transport equipment were probably substantially greater than those listed. Although the remainder of this chapter is confined to a discussion of the financing required to acquire aircraft and initial spares only, the implications of the added financing required by the carriers to integrate such equipment will have to be considered in finalizing SST financing arrangements.

EXHIBIT XV (2)

Uses:	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Purchase of flight equipment	20.0	3.9	36.0	39.3	(2.7)	32.2	31.5	(.6)	126.4	42.4	103.9	71.6	(25.7)	478.2	60.7%
Construction in progress				(8.5)	1.0	.1	4.1	17.3	(18.0)	3.9	1.6	(6.6)	21.2	16.1	2.0
Purchase of ground equipment	.9	2.1	2.6	2.8	1.2	9.1	4.6	5.7	6.9	5.0	4.2	3.5	1.9	50.5	6.4
Increase (decrease) in working capital	9.0	18.8	(5.2)	3.5	18.5	(31.8)	10.9	2.0	42.8	(10.1)	20.9	25.6	(16.8)	88.1	11.2
Debt repayment						1.8							27.8	29.6	3.7
Preferred stock retirement					18.0	6.3	.7	2.4	4.8	.2	.6	.1	1.2	34.3	4.3
Investments made					13.8	18.1	9.9	17.5		1.3			19.1	79.7	10.1
Other	1.5			1.0				1.4	4.6	1.6			2.9	13.0	1.6
Total uses	31.4	24.8	33.4	38.1	49.8	35.8	61.7	45.7	167.5	44.3	131.2	94.2	31.6	789.5	100.0%

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2. AIRLINE EQUIPMENT ACQUISITIONS SINCE 1951
APPEAR TO HAVE BEEN FINANCED BY A COMBINATION OF
EXTERNALLY SUPPLIED AND INTERNALLY GENERATED
FUNDS--GENERALLY IN ABOUT A 60-40 RATIO

The airline sector of this study was based on an analysis of the financing requirements of six major American carriers (American, Eastern, Northwest, Pan Am, TWA, United). The interview process and the literature search in combination lead to an approximation of the manner in which each of the carriers under review financed their equipment needs.

- (1) American Airlines Has Financed a \$478.0
Million Net Addition to Flight Equipment by
Applying 65% of Externally Supplied Funds
(Mainly Long-Term) Including Engine
Purchase Obligations and 35% of Internally
Generated Funds

A cash flow analysis shown in Exhibit XV, following this page, indicates that American's flight equipment account increased by a net of \$478.0 million between 1951 and 1963. Since this account is listed net of equipment dispositions, the value quoted is the minimum required and does not tie to the gross equipment outlay previously quoted in this chapter.

American's financing approach to the \$478.0 million net equipment requirement was established through interviews with American's personnel, cash flow analyses, and reviews of the company's indenture agreements.

American's basic approach in financing the \$478.0 million minimum requirement differed, however, from that employed by other carriers.

This carrier depends largely upon long-term debt, supplemented by short-term obligations, to provide the non-equity portion of its financing which approximates 65% of the total required. Long-term debt, in this case, takes the form of general obligation loans. Mortgage loans were not employed because of the loss of flexibility they entail. American attempts to obtain its long-term commitments of funds well in advance of actual needs, paying a commitment fee for the privilege, if need be.

Exhibit XVI, following Exhibit XV, presents a summary of the long-term debt negotiated by American during the period under review. The provisions of their agreements indicate that American began to anticipate its jet equipment financing requirements as early as 1956, since it negotiated a \$135.0 million long-term commitment in 1957 which was to be applied to the purchase of equipment. The carrier drew down \$50.0 million of this commitment in the form of general obligation notes through 1958. In 1959, as the heavy receipts of turbine equipment occurred, the carrier drew down the remainder of \$85.0 million. It arranged, in the same year, for an additional \$70.0 million in long-term funds, \$30.0 million of which were 5% notes and \$40.0 million of which were 5% subordinated convertible notes. The entire amount was drawn down in 1959 (\$55.0 million) and 1960 (\$15.0 million) as the new equipment cycle reached its peak point.

An additional \$85.0 million in long-term general obligation notes was arranged and drawn down in 1961 coincidental with the second peak of equipment additions.

EXHIBIT XVI

Supersonic Transport Financing Study

AMERICAN AIRLINES-- CASH FLOW ANALYSIS (NOTES TO EXHIBIT XV)

- 1) During 1959, 34 piston aircraft were sold, for a total of \$24,735,000. The charges to depreciation reserve for these units exceeded the depreciation charged during 1959 by \$5.2 million, resulting in a net decrease in total depreciation reserves. A profit after tax of \$7,682,997 was realized on this disposal and is reflected as a significant source of funds for the year, included in the category "profits retained."
- 2) In 1957, the initial \$40 million of a planned \$135 million issue of 4% and 4-1/4% promissory notes was sold to insurance companies. Terms called for repayment over 30 years, commencing in 1967. Covenantants in the indenture restricted cash dividends to approximately one-half of retained earnings at the time of the loan, or \$36,959,834.
- 3) During 1958, an additional \$10 million of the above issue was floated.
- 4) During 1959, the remainder of the above \$135 million note issue was floated, providing an additional \$85 million. In addition, arrangements for notes of \$30 million at 5% and \$40 million at 5% with subordinated, convertible features were made. This issue, less approximately \$15 million of 5% promissory notes, or
- 5) The principal debt additions during 1960 were issuance of the remaining \$15 million of the above-mentioned 5% promissory note, due 1967-1996, issue.
- 6) A new issue of long-term obligations, in the amount of \$8.5 million at 5-3/4%, was issued in 1961. Restrictions on cash dividends were not substantially increased.
- 7) During 1962, obligations to purchase equipment, especially engines, were acknowledged. Most significant of these were engine purchase obligations, at 4-1/4% to 4-3/8%, in the amount of \$26,541,417 plus current portions. These are due from 1963 to 1970, and had not previously been shown in balance sheet disclosures.

The total debt described thus far totaled \$290.0 million. In addition, externally supplied funds in the approximate amount of \$21.0 million were made available in the form of engine purchase obligations. The carrier initially treated these obligations as non-capitalized lease commitments. In 1962, American, at the suggestion of its public accountants, acknowledged these obligations as long-term debt because of its intent to exercise the purchase option provisions.

The sum of the foregoing plus other arrangements (not analyzed in detail) supplied American with \$311.0 million in long-term funds, or the equivalent of 65% of its equipment fund requirements. Internally generated funds supplied an estimated \$167.0 million, or 35% of American's equipment fund requirement. This requirement appears to have been supplied from depreciation, or from a combination of depreciation, deferred tax payments, and retained earnings.

In either event, American appears to have anticipated its jet age financing requirements well in advance, although it may have overborrowed somewhat in the process.

American's depreciation, a source of slightly more than 20% of its total cash generation, is geared to a 12-year, 15% residual value in its jet fleet. This represents a change from a 10-year cycle, an adjustment which practically all carriers have made since 1963.

This carrier does not, as a matter of policy, lease aircraft. It does, however, in common with most carriers, lease ground facilities.

In contrast to other carriers, American does not use short-term debt as a financing vehicle other than for unanticipated short-term working capital needs.

- (2) United Air Lines Has Financed a \$620.0 Million Increase in Net Flight Equipment, 50% from Internally Generated Funds and 50% from External Sources

A cash flow analysis, shown in Exhibit XVII, following this page, indicates that United's flight equipment account increased by a net of \$620.0 million between 1951 and 1963. The outlay quoted is also a minimum. The cash flow analysis provides the basis for the comments which follow, since no interviews were conducted with United personnel to verify the assumptions used.

The net increase in United's flight equipment account of \$620.0 million includes an estimated \$85.0 million at year-end 1963 to cover the net investment outstanding on Caravelle and Viscount equipment. The financing methods used by United apply, to some degree, to these European-made aircraft.

United has evolved a different approach from the one followed by American. Basically, United has depended on internally generated funds, long-term loans, convertible debentures, and short-term bank loans in combinations which vary from time to time.

During the period reviewed, United obtained about half of its requirements for funds from internal, and half from external sources. An estimated cash flow statement was developed for

EXHIBIT XVII (1)

Supersonic Transport Financing Study

UNITED AIR LINES--
CASH FLOW--1951-1963

(Dollars in Millions)

	Year-End											Total			
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:															
Profits retained	8.5	8.0	4.5	5.3	21.2	10.8	3.9	9.4	11.0	6.5	4.8	1.4	24.2	119.5	13.6%
Depreciation charges:															
Flight equipment	5.7	7.8	9.7	5.8	14.8	12.3	15.6	21.2	16.0	17.2	76.0	40.0	20.2	262.3	30.1
Ground equipment	.8	1.0	1.7	1.9	1.6	2.9	3.2	3.1	3.0	6.0	13.5	2.7	5.7	47.1	5.4
Long-term debt increases		4.8 ¹⁾		31.5 ³⁾		23.4 ⁵⁾	32.9 ⁶⁾	18.3 ⁷⁾	37.0 ⁸⁾	93.5 ⁹⁾	67.8 ¹⁰⁾			309.2	35.5
Tax payments deferred				.3	3.8	3.2	3.6	4.9	6.7	3.5	7.7	2.4	13.2	49.3	5.7
Investments liquidated		3.6	2.3		1.8		.7	1.0		.9				10.3	1.2
Common stock	2.2	1.7			7.5	.2	2.3	2.3	2.6	2.7	7.9	3.2	11.5	44.1	5.1
Preferred stock sales (retirement)	(5.2)	17.9 ²⁾	(.5)	(.6)	(20.9)						15.9 ¹¹⁾	(.5)	(.5)	5.6	.6
Other	1.0	2.4	.3	.4	.2	.2	.3	.5		.2	6.5	9.1	3.4	24.5	2.8
Total sources	13.0	47.2	18.0	44.6	50.0	53.0	62.5	60.7	76.3	130.5	200.1	58.3	77.7	871.9	100.0%

EXHIBIT XVII (2)

Uses:	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars Percent	
Purchase of flight equipment	6.0	30.3	25.0	38.0	4.4	22.5	43.8	23.3	61.5	134.1	192.9	33.0	3.8	618.6	71.0%
Construction in progress				(5.5)	8.4	7.5	.7	34.3	26.0	(32.9)	(16.2)	(27.3)	4.8	(.2)	
Purchase of ground equipment	(1.2)	2.4	4.5	7.5	2.0	4.3	5.6	10.8	7.9	13.2	20.7	3.7	6.2	87.6	10.0
Increase (decrease) in working capital	(5.9)	14.5	(13.1)	3.6	1.8	16.1	12.4	(7.8)	(24.3)	12.4	2.4	(4.1)	(12.2)	(4.2)	(.5)
Debt repayment	5.9		1.3		13.3 ⁴⁾							30.5 ¹²⁾	54.6 ¹³⁾	105.6	12.1
Investments made	5.3			.1		2.2			1.0		.3	21.4	20.5	50.8	5.8
Other	2.9		.3	.9	.1	.4		.1	4.2	3.7		1.1		13.7	1.6
Total uses	13.0	47.2	18.0	44.6	30.0	53.0	62.5	60.7	76.3	130.5	200.1	58.3	77.7	871.9	100.0%

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this carrier, and its indenture provisions and annual reports were reviewed prior to arriving at this conclusion.

The external portion of the funds applied was also roughly split equally between long-term debt and shorter term bank loans, as indicated by the data contained in Exhibit XVIII, following this page. United arranged for \$150.0 million of long-term debt in three stages, in 1952, 1954, and 1955, and drew the funds down in 1952, 1954, and between 1956 and 1959 as needed. All of the debt was arranged with insurance companies

During the period prior to 1960, no important use was made of bank borrowings. United, however, appears to have anticipated its total new equipment funding needs as early as 1955 and to have placed a relatively heavy reliance on short-term bank debt to be used in meeting peak requirements. In that year, it appears that the carrier made long-range plans for the use of bank credit. In 1955, United, arranged an initial agreement with a number of banks for \$30.0 million in revolving credits to be converted to a term loan in 1961. This agreement was modified and expanded several times before United drew down any credit. The carrier had drawn down no funds from this initial credit prior to 1960, by which time the credit agreements had been modified to permit a limit of \$180.0 million. As the peak equipment influx occurred in 1960, United drew upon the credits which had been available to it in various amounts since 1955.

In this process, United drew down a peak of \$156.0 million by February 1962. At the time

this report was prepared, United, had not converted any of this \$156.0 million credit to term loans. It had, however, reduced the \$156.0 million bank debt to \$42.0 million by early 1964, out of retained earnings and the proceeds of 5% 20-year notes.

United thus appears to have utilized \$150.0 million in long-term debt and \$156.0 million in prearranged bank credits to supply the external funds needed for its jet equipment program, at a rate approximating 4½%. The combination of the two sources provided United with \$306.0 million of the net equipment acquisition total of \$620.0 million.

The internal funds, which approximated \$314.0 million, are assumed to have been provided from depreciation (\$262.0 million), deferred tax payments (\$49.0 million), and retained earnings (\$3.0 million), net of debt repayments.

(3) Eastern Air Lines' Recent Profit and Loss History, and the Financing Compromises Made because of It, Limits the Utilization of an Appraisal of This Carrier's Financing Practices

A cash flow analysis of Eastern for the period 1951-1963, shown in Exhibit XIX, following Exhibit XVIII, indicates in part the effect on its financing occasioned by its recent profit problems.

The notes to the cash flow analysis contained in Exhibit XX, following Exhibit XIX, suggest that the company's 1958 financing was costly to it in subsequent years.

EXHIBIT XVIII (1)

Supersonic Transport Financing Study

UNITED AIR LINES-- CASH FLOW ANALYSIS (NOTES TO EXHIBIT XVII)

- 1) On February 1, 1952, the company sold \$10 million of 3-1/2%, 15-year debentures to the Metropolitan Life Insurance Company and the Mutual Life Insurance Company.
- 2) On March 18, 1952, the company forced conversion of the outstanding portion of \$4 million of a convertible preferred issue, and sold a new issue of 4-1/2% cumulative convertible preferred stock which provided about \$22 million, or a net after conversions of about \$18 million. In addition to these two financing agreements, the company arranged for a bank credit line of \$45 million with a group of 38 banks headed by the First National City Bank of New York. Interest was set at 3-1/4%, and no borrowings were made in 1952.
- 3) On September 10, 1954, the company sold \$20 million of 3-3/4% debentures to the Metropolitan Life Insurance Company and the Mutual Life Insurance Company of New York. In addition, \$13 million of bank borrowings were converted to notes repayable over 5 years with interest at 3-1/4%.
- 4) During 1955, the company made its plans for jetliner financing. Conversion of all outstanding preferred was forced and existing bank borrowings were repaid. Arrangements were made for the sale of \$120 million of 4% sinking fund

debentures to the Metropolitan Life Insurance Company, the Prudential Insurance Company of America, and the Mutual Life Insurance Company of New York to be drawn down as needed. The earlier bank credit agreement was amended to provide a credit line of \$30 million, to revert to a 5-year term loan on December 31, 1960. No borrowings were made under these agreements.

- 5) During 1956, funds were raised as follows:

4% insurance company notes \$25,200,000

Bank line of credit
(repaid prior to year-end) 3,000,000

- 6) During 1957, additional funds of \$34,800,000 were raised through sale of 4% notes to insurance companies under the 1955 agreement, which left an unissued amount of \$60 million.

While the bank line of credit remained unused at year-end, a new agreement was concluded making available \$130 million through 1960. At that time, outstanding balances were to revert to a term loan at the prime rate and repayable over 5 years.

- 7) On December 30, 1958, \$20,400,000 of insurance company 4% notes were issued, leaving \$39,600,000 of the \$120,000,000 agreement unused. The bank credit line remained unused.

- 8) During 1959, the remaining \$39,600,000 of the 4% note issue was sold, bringing long-term borrowings under this issue up to \$120 million and total long-term borrowings to \$148,644,000. The bank credit agreement was modified to permit borrowings up to June 30, 1962, with repayments in quarterly installments beginning January 1, 1963. The bank line went unused in 1959.
- 9) Starting in January 1960, portions of the bank line of credit were used for the first time. By year-end, \$71 million had been borrowed. During the year, the terms of this agreement were modified to permit borrowings up to \$165 million, leaving \$94 million still available after current borrowings.
- In addition, on November 30, 1960, \$25 million of convertible subordinated debentures were sold. These debentures carry an interest rate of 4-7/8% and are due on December 1, 1985.
- 10) During 1961, an additional \$69 million of bank credit was used, bringing total bank borrowings via 4-3/4% term loan notes to \$140 million. Terms of the bank credit agreement permit borrowings of up to \$165 million, as needed, prior to July 1, 1962, with repayment to begin January 1963.
- 11) Also during 1961, as a result of the merger with Capitol, an issue of 5-1/2% cumulative preferred stock was created, held by Vickers-Armstrong, Limited.
- 12) During 1962, the bank credit agreement was modified to extend the revolving credit expiration date from June 30, 1962, to December 31, 1964, and to permit borrowings up to \$180 million. Repayment is to be made in 20 installments beginning July 1, 1965. Borrowings under this agreement were reduced during the year to \$112 million, from \$140 million at year-end 1961 and \$156 million in February 1962.
- 13) On July 29, 1963, conversion of the 4-7/8% subordinated convertible debentures was forced, reducing debentures outstanding by about \$25 million. During the year, bank borrowings were reduced by \$27 million, to \$85 million.

Note: Not shown in the exhibit are early 1964 financing arrangements. On February 5, 1964, an issue of 5%, 20-year notes in the amount of \$60 million was sold to institutional investors. Proceeds were used to further reduce bank borrowings to \$42 million, and credit available under the bank agreement was reduced from \$180 million to \$120 million.

EXHIBIT XIX (1)

Supersonic Transport Financing Study

EASTERN AIR LINES--
CASH FLOW--1951-1963

(Dollars in Millions)

	Year-End											Total			
	<u>1951</u>	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>Dollars</u>	<u>Percent</u>
Sources:															
Profits retained	6.1	7.3	6.6	5.9	10.9	9.3	8.9	5.1	9.8					69.9	10.5%
Depreciation charges:															
Flight equipment	4.6	9.8	13.0	22.2	19.7	15.1	19.5	16.1	25.8	12.5	23.6	11.7	44.3	237.9	35.7
Ground equipment	.4	.7	1.1	1.5	1.5	2.2	2.1	2.1	2.7	3.6	2.9	3.9	3.9	28.6	4.3
Long-term debt															
increases	21.5 ¹⁾	10.5 ²⁾		9.0 ³⁾	14.0 ⁴⁾		25.0 ⁵⁾	40.0 ⁶⁾	20.0 ⁷⁾	30.0 ⁸⁾	30.0 ⁹⁾		42.0 ¹⁰⁾	242.0	36.3
Tax payments deferred								5.5	10.5	1.3				17.3	2.6
Investments liquidated									20.9	7.4				28.3	4.3
Common stock		1.1		.2	.3	11.4	2.0	.1	.2					15.3	2.3
Other	<u>1.5</u>	<u>1.2</u>	<u>.3</u>	<u>1.2</u>	<u>2.0</u>	<u>2.8</u>	<u>2.1</u>	<u>2.0</u>	<u>2.9</u>	<u>—</u>	<u>4.4</u>	<u>1.5</u>	<u>4.4</u>	<u>26.3</u>	<u>4.0</u>
Total sources	<u>34.1</u>	<u>30.6</u>	<u>21.0</u>	<u>40.0</u>	<u>48.4</u>	<u>40.8</u>	<u>59.6</u>	<u>70.9</u>	<u>92.8</u>	<u>54.8</u>	<u>60.9</u>	<u>17.1</u>	<u>94.6</u>	<u>665.6</u>	<u>100.0%</u>

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	Year-End													Total	
	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Uses:															
Purchase of flight equipment	23.2	29.6	13.1	15.3	29.1	68.5	33.3	62.2	73.9	51.9	31.2	(13.3)	10.6	428.6	64.4%
Purchase of ground equipment	2.8	4.1	2.8	.5	1.2	2.7	2.0	2.6	8.1	4.9	6.2	4.5	4.0	46.4	7.0
Increase (decrease) in working capital	8.0	(6.0)	(6.2)	23.4	16.8	(36.3)	16.9	(.4)	5.6	(14.1)	(9.9)	(15.6)	29.7	11.9	1.8
Debt repayment			11.0									20.0		31.0	4.7
Losses incurred									6.8	10.4		13.4	37.7	68.3	10.2
Payment of deferred tax											12.8	4.1	.4	17.3	2.6
Investments made	.1			.8		5.9	.2	5.0			1.8	1.8	9.9	25.5	3.8
Other		2.9	.3		1.3		7.2	1.5	5.2	5.3	8.4	2.2	2.3	36.6	5.5
Total uses	34.1	30.6	21.0	40.0	48.4	40.8	59.6	70.9	92.8	54.8	60.9	17.1	94.6	665.6	100.0%

EXHIBIT XX (1)

Supersonic Transport Financing Study

EASTERN AIR LINES--
CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XIX)

- 1) On December 31, 1951, the company borrowed \$30 million under a revolving credit agreement with a group of banks, payable in 12 equal quarterly installments beginning December 31, 1952, with interest at 2-1/4% to September 30, 1952, and 2-1/2% thereafter. Principal terms were:
1. Working capital maintained at not less than \$9 million.
 2. Dividends, other than stock dividends, will not be paid which will reduce earnings retained below \$19,026,112.47.
 3. Loan outstanding must not exceed depreciated value, computed on a basis of a 5-year life, of the flying equipment.
- 2) On September 30, 1962, the above agreement was amended to provide an additional \$10 million, and extend repayment. Principal terms remained unchanged.
- 3) The above bank credit agreement was supplemented on April 20, 1954, to extend certain payments by 3 years and to increase rate to 3-1/4%. Terms relating to working capital, dividends, and relationship between principal and flight equipment value remained unchanged.

- 4) In October 1955, the company entered into a loan agreement with The Equitable Life Assurance Society of the United States to borrow \$50 million prior to December 16, 1955, and an additional \$40 million prior to 1959. Notes to be repayable from 1966 to 1975, with interest at 3-3/4%. Standby fee of .5% on unused amount of commitment. While loan is outstanding, the company will not declare cash dividends unless after giving effect thereto:
1. Current assets shall be at least 125% of current liabilities.
 2. Net working capital shall be at least \$15 million.
- Proceeds of this loan were used to repay bank borrowings.
- 5) On December 2, 1957, the company borrowed \$25 million under the terms of the above agreement, at 4.136%.
- 6) On January 31, 1958, the final \$15 million was borrowed from The Equitable Life Assurance Society of the United States at a rate of 3.958%. In addition, a \$25 million subordinated convertible promissory note, at 5% and due December 1, 1978, was made to the Prudential

Insurance Company of America. Also, a line of credit with 18 banks, headed by the Chase Manhattan Bank of New York, made \$50 million available at prime rate, but not below 3-1/2% or above 4-1/2%, up to December 31, 1961. Standby fee of .5% on the unused portion. On January 1, 1962, the loan converted to a 3-year term loan, with interest at .25% above the prime rate, with a minimum of 3-3/4% and a maximum of 4-3/4%.

7) and 8) The \$50 million available under the above agreement was drawn down during 1959 and 1960.

9) The above agreement was increased to provide an additional \$10 million, and an additional \$20 million revolving credit agreement was arranged. The repayment terms of the original bank credit agreements were extended to provide for repayment in 1963, 1964, and 1965. The company was restricted to payment of dividends out of retained earnings accumulated after December 31, 1961, plus \$2.5 million.

10) On November 15, 1963, agreement was made:

1. Extending the maturities on the outstanding \$170 million due to insurance companies and banks.
2. \$22 million of prior subordinated convertible notes were placed privately at 5-3/8%.
3. Addition credit of \$45 million at 5.25% was secured and \$25 million was drawn down. Flight equipment was

pledged as security, and cash dividends were restricted to 50% of net income subsequent to January 1, 1964, and deferred until all of the \$45 million due in 1967 is repaid.

The financing agreement negotiated in late 1963 rectified, to the extent its financial position permitted, some of the balance sheet and cash flow problems generated by the 1958 agreement, as amended.

Since it appears that Eastern's jet age financing has been atypical, the carrier's practices should not be used in assessing the alternative solutions to the broader questions at issue. Nonetheless, a composite summary of Eastern's financing pattern for the period under review may be of some value.

Eastern has made use of long-term loans, short-term loans, revolving credits, and internally generated funds in financing its net increase in flight equipment of \$429.0 million during the 1951-1963 period.

The carrier financed almost 60% of this amount, over the period covered, from long- and short-term debt issued and slightly more than 40% from internally generated funds. During the jet equipment cycle, however, Eastern has used debt in various forms to satisfy 70% of its equipment requirements and supplied only 30% from internally generated funds, after providing for cash losses from operations.

(4) Northwest Airlines Has Expended, on a Net Basis, \$135.0 Million for Flight Equipment during the 1951-1963 Period Which It Financed on a 67% External and 33% Internal Basis

Although no interviews were conducted with this carrier, cash flow analysis, shown in Exhibit XXI, following this page, indicates that

Northwest required a minimum equipment outlay of \$135.0 million during the period 1951-1963.

This carrier appears to have paid for its net increase in flight equipment by providing funds obtained on a 2/3 external and 1/3 internal basis. The external funds were obtained in a manner somewhat similar to the method employed by United, as indicated in the cash flow notes shown in Exhibit XXII, following Exhibit XXI.

Northwest placed \$40.0 million of promissory notes at 6% with insurance companies in 1958 and 1959. It negotiated, concurrently, a revolving credit agreement which provided \$42.5 million in funds, convertible to a 5-year term loan at year-end 1961. The carrier drew down \$34.0 million of the total through 1961.

Long-term debt and bank credit at mid-1961 thus totaled \$74.0 million. During the remainder of 1961, Northwest placed a second 5% promissory note, with a 10-year maturity, in the amount of \$7.5 million. This note was tied directly to the purchase of six Boeing 720B aircraft. By year-end 1961, Northwest had obtained \$81.5 million in outside funds, of which \$40.0 million were long-term and \$41.5 million essentially short-term funds.

Northwest also had negotiated in 1957 a conditional sales agreement in the amount of \$9.3 million in order to acquire 7 Electra aircraft; bringing the total outside financing to \$91.0 million.

Internally supplied funds of \$44.0 million are assumed to have come from depreciation

EXHIBIT XXI (1)

Supersonic Transport Financing Study

NORTHWEST AIRLINES-- CASH FLOW--1952-1963

(Dollars in Millions)

	Year-End												Total	
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Sources:														
Profits retained	1.5	1.5	2.1	1.2	2.1	2.5	4.3	4.1	(.1)	1.9	5.6	15.5	42.2	17.4%
Depreciation charges:														
Flight equipment	1.4	2.8	2.8	5.0	3.3	(4.0)	5.4	(6.4)	6.8	2.8	9.1	3.1	32.1	13.3
Ground equipment	.7	.7	.5	.7	.7	.8	.8	.7	(.1)	.3	(.1)	1.2	6.9	2.9
Long-term debt increases				14.6		13.1	7.3	15.7 ¹⁾	18.5 ³⁾	21.8 ⁴⁾			91.0	37.8
Tax payments deferred				.7	.8	(.2)	3.9	3.1	.8	2.5	5.9	3.1	20.6	8.6
Investments liquidated	.2					6.0			7.3	4.2			17.7	7.4
Common stock		.1	.3	2.0	6.3	.6	.3	.1		.1		4.3 ⁵⁾	14.1	5.9
Preferred stock sales							10.6 ²⁾						10.6	4.4
Other	.1	.5			.3	.3			.1	1.1	.7	2.6	5.6	2.3
Total sources	3.9	5.6	5.7	24.2	13.5	19.1	32.6	17.3	33.3	34.7	21.2	29.8	240.8	100.0%

Uses:	Year-End												Total	
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Purchase of flight equipment	(3.4)	(.1)	3.4	15.3	.2	15.0	19.1	13.1	16.4	50.7	(1.2)	6.6	135.1	56.17
Construction in progress	.1	.1	.3	(.4)	.7	(.1)	1.3	1.3	(.1)	(1.1)	(.5)	.3	.6	.3
Purchase of ground equipment	.4	.7	.4	1.0	.5	1.0	.9	2.4	3.2	(.2)		.6	10.9	4.5
Increase (decrease) in working capital	1.0	(.8)	(.3)	.2	1.8	3.1	6.1	(1.6)	11.1	(16.0)	.9	(1.6)	3.9	1.6
Debt repayment	5.1	4.2	1.0		.7						15.3	10.0	36.3	15.1
Preferred stock retirement	.1	.2	.2	2.0	6.4	.1		.1			.1	11.2	20.4	8.5
Investments made	.2	.7	.7	5.7	3.2		5.9	1.0		1.3	6.6	2.6	27.7	11.5
Other	.4	.1		.4			.6		2.7				5.7	2.4
								1.0						
Total uses	3.9	5.6	5.7	24.2	13.5	19.1	32.6	17.3	33.3	34.7	21.2	29.7	240.8	100.07

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EXHIBIT XXII

Supersonic Transport Financing Study

NORTHWEST AIRLINES--
CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XXI)

- 1) During the period 1955 to 1959, the company raised \$50 million, as follows:
 1. \$40 million of 6% notes, placed privately with insurance companies on December 29, 1958 (\$34,250,000), and January 15, 1959 (\$5,750,000). To be repaid at \$3 million annually between 1966 and 1977 and final \$4 million in 1978.
 2. Bank credit was arranged concurrently with the above note issue, making available credit up to \$42.5 million on a revolving credit basis, to revert to a term loan at 5% and repayable in 5 years on December 31, 1961. Of this line, \$10 million was drawn down through 1959.

Principal covenants required net tangible assets to exceed 150% of funded debt to October 1, 1963, and 167%, thereafter, and funded debt to remain below 80% of the depreciated value of flight equipment to October 1, 1963, and 75%, thereafter.

- 2) On December 8, 1958, an issue of 5-1/4% cumulative convertible preferred stock was sold

through rights on the common stock, on a basis of one share of preferred for each three of common held. The offering was underwritten by First Boston Corp., New York, and yielded the company approximately \$11.5 million.

- 3) During 1960, an additional \$18.5 million was obtained under the revolving bank credit agreement mentioned above.
- 4) During 1961, borrowings under the bank credit agreement were increased by \$5.5 million, to \$34 million of an available \$42.5 million. Also, directly tied to the purchase of six Boeing 720 B jets, an issue of subordinated 6% promissory notes in the amount of \$7.5 million was sold. Prepayment was provided for, based on the company's annual net earnings, but the notes are due at \$1.5 million per year from 1967 to 1971.

Additional equipment--namely seven Lockheed Electra prop-jets--was acquired under conditional sales contracts in the amount of \$9,253,541. These bear interest at 5% and are payable over 60 monthly periods ending in 1962.
- 5) During 1963, the company reduced long-term borrowings and forced conversion of the cumulative preferred stock issue of 1958. This resulted in an additional 432,254 of common shares, or about \$4.3 million at a par value of \$10 per share.

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(\$32.0 million) and application of deferred tax payments (\$12.0 million). The combination provided one-third of the total funds needed by Northwest.

This carrier also appears to have planned its needs for funds well in advance of actual equipment acquisition and to have decided to utilize a 50-50 long- and short-term borrowing policy. Its approach resembles United's in the early application of long-term debt and the use, as needed, of credit previously arranged.

(5) Pan American Appears To Have Financed \$384.0 Million in Net Flight Equipment and \$119.0 Million in Other Investments on a 60% External and 40% Internal Basis

A cash flow analysis, shown in Exhibit XXIII, following this page, indicates that Pan American increased its flight equipment account on a net basis by \$384.0 million during the period 1951-1963. The analysis also indicates that the carrier made \$119.0 million in other capital investments. The latter outlays were directed, in the main, to the buildup of its hotel business. While these investments were essentially unrelated to airline operations, it was not possible to segregate the application of debt as between flight equipment and these other investments. Therefore, the capital investment funding has been analyzed in total.

This carrier expressed a preference for long-term institutional borrowing and the intention of utilizing this approach wherever possible. The postwar record, however, indicates that Pan American has not been able to follow its preferred long-term practice-- probably because the extent of its non-equipment

borrowing forced use of bank funds, on a cash flow basis, for some part of its equipment program.

Since 1953, the carrier invested about \$505.0 million in net funds for equipment and other capital investments. A net of \$310.0 million or 60% was raised through external sources. Of this amount, \$165.0 million or slightly more than 50% was in long-term debt, including \$47.0 million of convertible subordinated debentures. The short-term funds, which totaled \$145.0 million, represented slightly less than 50% of the external total, and were in revolving credit form, convertible to 5-year term notes.

Internally generated funds totaled \$205.0 million, or 40% of the total required. Depreciation flow is assumed to have accounted for \$178.0 million and deferred tax payments the remaining \$27.0 million.

Pan American began planning its equipment and other investment program in 1953 when it arranged for 5-year bank credits in the amount of \$43.0 million and drew down \$15.0 million of the total. The carrier, however, negotiated its first institutional long-term airline credit agreement in 1955 in the amount of \$60.0 million of which \$40.0 million was drawn down. The proceeds were used in part to pay off the bank borrowings taken down in 1953.

The company continued the use of insurance company funds by negotiating a \$30.0 million loan in 1956 for drawdown before 1959. Pan American then negotiated a \$130.0 million revolving credit agreement in late 1958 in anticipation of the receipt of its first turbine

EXHIBIT XXIII (1)

Supersonic Transport Financing Study

PAN AMERICAN WORLD AIRWAYS--
CASH FLOW--1952-1963

(Dollars in Millions)

	Year-End													Total	
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent	
Sources:															
Profits retained	5.1	5.2	7.4	2.8	6.7	3.9	8.0	2.5	2.0	2.2	10.3	23.4	79.5	10.9%	
Depreciation charges:															
Flight equipment	10.5	5.8	6.0	6.8	12.5	13.2	16.0	19.9	32.7	(10.5)	32.6	32.6	178.1	24.5	
Ground equipment	1.0	1.0	1.7	1.6	.2	2.0	1.5	1.9	3.1	3.4	3.2	3.1	23.7	3.3	
Long-term debt increases	15.5 ¹⁾			24.8 ²⁾	24.6 ³⁾	3.4	77.8 ⁴⁾	88.6 ⁵⁾	69.8 ⁶⁾				304.5	41.8	
Deferred charges converted	4.4	5.7	11.3	.8						5.3	.9		28.4	3.9	
Tax payments deferred						5.1	.1	.5	6.1	.9	1.2	18.5	32.4	4.5	
Investments liquidated									58.5 ⁷⁾		1.4		59.9	8.2	
Common stock			.2		.3	.1	.5			.1	(.3)		.9	.1	
Deferred credits increase															
(decrease)	.6	(.2)	(4.8)	1.8	.2	(4.6)	.7	1.9	9.0	1.4	1.5	1.4	8.9	1.2	
Other	.8	.6	—	.2	—	.2	.7	2.6	3.3	1.0	2.1	—	11.5	1.6	
Total sources	22.4	33.6	21.8	38.8	44.5	23.3	105.3	117.9	184.5	(1.5)	57.6	79.6	727.8	100.07	

	Year-End												Total	
	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>Dollars</u>	<u>Percent</u>
Uses:														
Purchase of flight equipment	28.6	15.6	13.6	10.4	48.8	9.1	27.1	102.1	157.5	(52.7)	29.9	(6.2)	383.8	52.7%
Purchase of ground equipment	1.7	1.8	1.5	1.6	2.2	2.4	1.3	8.2	8.3	3.8	3.2	3.1	39.1	5.4
Increase (decrease) in working capital	(7.9)	12.9	(10.0)	12.8	(11.6)	(5.8)	35.1	(15.4)	7.0	2.0	(5.2)	(22.6)	(8.7)	(1.2)
Debt repayment			14.8							26.4	29.7	78.0	148.9	20.5
Deferred charges incurred					.7		4.9	8.8	11.6	3.4			29.4	4.0
Investments made		3.1	1.3	13.7	4.3	15.9	35.7	13.2		14.6		17.0	118.8	16.3
Other		.2	.6	.3	.1	1.7	1.2	1.0	.1	1.0		10.3	16.5	2.3
Total uses	<u>22.4</u>	<u>33.6</u>	<u>21.8</u>	<u>38.8</u>	<u>44.5</u>	<u>23.3</u>	<u>105.3</u>	<u>117.9</u>	<u>184.5</u>	<u>(1.5)</u>	<u>57.6</u>	<u>79.6</u>	<u>727.8</u>	<u>100.0%</u>

equipment in 1959. This credit, later raised to a net of \$145.0 million, was convertible by 1961 to 5-year term notes.

The final borrowing made in 1959 was long term and took the form of 4-7/8% convertible subordinated debentures offered through common stock subscription rights, which yielded \$47.0 million.

The cash flow analysis, shown in Exhibit XXIV, following this page, indicates that Pan American did convert its revolving credit into 5-year term notes. The company paid back from 1961-1963, on what appears to be an accelerated basis, about \$135.0 million of the total outstanding.

- (6) Trans World Airlines Appears To Have Financed a Net Flight Equipment Increase of \$471.0 Million and Other Investments of \$111.0 Million on a 60% External and 40% Internal Basis

A cash flow analysis, shown in Exhibit XXV, following Exhibit XXIV, indicates that TWA expended \$471.0 million in net flight equipment outlays and \$111.0 million in other capital investments, the latter mainly in terminal and other ground facilities, and that it financed the required outlays 60% from external and 40% from internal sources.

TWA's unique financial history suggests that this carrier's experience should not be used in the derivation of any specific financing pattern. The carrier's plans for rectifying its balance sheet situation and for its future financing are probably of more importance than

the manner in which it financed the \$582.0 million capital requirement.

A permanent layer of long-term debt is anticipated, after the current balance sheet problems are resolved. Continuation of the profitable nature of the company's current and projected operations is being relied on to accomplish this end.

TWA plans to use revolving credits convertible to term loans, at its option, which would be used to supply the peak requirements of an equipment purchase cycle up to a level of 60% of the total required.

Exhibit XXVI, following Exhibit XXV, presents a summary of the 13-year cash flow history of the carriers discussed above.

The foregoing comments have been made on the basis of our analysis of the various cash flow statements prepared for each of the carriers, supplemented by interviews with four of the carriers and the financial community. The comments are interpretative since it was not possible to trace the application of all borrowings and internally generated funds.

3. SEVERAL BASIC TRENDS APPEAR TO BE IN EVIDENCE WITH RESPECT TO THE FINANCING OF TRANSPORT EQUIPMENT

The literature search and interview process combined to uncover several basic trends which appear to exist in the financing of transport equipment. These trends are listed in summary fashion below:

EXHIBIT XXIV

Supersonic Transport Financing Study

PAN AMERICAN WORLD AIRWAYS--
CASH FLOW ANALYSIS
(NOTES TO EXHIBIT XXIII)

- 1) Prior to 1955, the company obtained long-term loans under a 5-year credit agreement with 29 banks, including the First National City Bank of New York, The Chase Manhattan Bank, Bankers Trust Company, The Hanover Bank, Mellon National Bank and Trust Company, and the New York Trust Company as agent. This provided a maximum of \$43,125,000 in 1953, when an additional \$15.5 million was drawn down.
- 2) On May 10, 1955, the first institutional-airline credit agreement was reached, which made \$60 million available from a group of 18 insurance companies at an interest rate of 3-3/4%. About \$40 million was drawn down in 1955, part of which was used to reduce bank borrowings. The loan covenants restricted dividends to earnings subsequent to December 31, 1955, plus \$10 million, and company borrowings were limited by an asset ratio test, which required fundable assets to be equal to restricted indebtedness as the terms were defined in the agreement.
- 3) On December 19, 1956, additional insurance company credit of \$30 million at 4-3/4% was arranged, to be drawn down prior to 1959. Again, dividends were restricted to earnings after December 31, 1955, plus \$10 million, and debt was prohibited from exceeding the depreciated

value of the flight equipment. The total insurance company borrowings of \$90 million were scheduled for repayment in 14 annual payments of \$5,850,000 between 1966 and 1980.

- 4) On October 31, 1958, a credit agreement providing up to \$130 million from banks was arranged, at an interest rate of 5%. These loans were to revert to notes on June 30, 1961, to be repaid over a period of 5 years.
- 5) In addition to borrowings under the above bank revolving credit arrangement, the company issued 4-7/8% convertible subordinated debentures on July 29, 1959. These were offered through common stock rights, and provided \$46,971,000, less cost of underwriting.
- 6) In 1960, the bank revolving credit agreement was amended to provide an additional \$18.5 million, or a total of \$148.5 million of revolving credit. On August 15, 1960, an additional \$50 million of notes was sold to insurance companies, this issue bearing interest at 6%. The proceeds of this issue were used to convert a portion of the current bank borrowings to long-term debt.
- 7) These investments include advances on the purchase of flight equipment, which are transferred to the flight equipment account when the units are delivered.

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EXHIBIT XXV (1)

Supersonic Transport Financing Study

TRANS WORLD AIRLINES--
CASH FLOW--1952-1963

(Dollars in Millions)

	Year-End											Total		
	<u>1952</u>	<u>1953</u>	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>Dollars</u>	<u>Percent</u>
Sources:														
Profits retained	2.2	5.1	10.3	5.4				9.4	6.4			20.3	59.1	7.27
Depreciation charges:														
Flight equipment	12.1	16.9	15.7	16.5	13.6	19.4	23.4	14.1	10.6	41.8	4.2	32.8	221.1	27.1
Ground equipment	.9	1.2	1.4	1.4	1.7	1.3	2.4	3.0	2.9	4.3	(.6)	1.1	21.0	2.6
Long-term debt increases	5.4			16.5	30.9				90.2	157.3	41.7		342.0	41.8
Tax payments deferred	1.6	1.5	1.4	2.0	6.2	1.0		6.4	1.6				21.7	2.7
Investments liquidated	11.1			18.6		21.0					38.1		88.8	10.9
Common stock	15.3	.1				43.1						.1	58.6	7.2
Other noncurrent liabilities						.8	18.3	(17.9)	99.8	(99.4)	6.6	(6.9)	1.3	.2
Other sources							.2		.3	1.6			2.1	.3
Total sources	<u>48.6</u>	<u>24.8</u>	<u>28.8</u>	<u>60.4</u>	<u>52.4</u>	<u>86.6</u>	<u>44.3</u>	<u>15.0</u>	<u>211.8</u>	<u>105.6</u>	<u>90.0</u>	<u>47.4</u>	<u>815.7</u>	<u>100.07</u>

CONFIDENTIAL

EXHIBIT XXV (2)

	Year-End												Total	
	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	Dollars	Percent
Uses:														
Purchase of flight equipment	44.4	.4	2.8	52.0	19.9	69.2	10.5	(4.5)	134.4	55.1	67.8	19.5	471.5	57.8%
Purchase of ground equipment	3.7	2.4	2.0	3.1	6.1	3.2	7.1	7.8	3.5	4.9	.1	.8	45.7	5.6
Construction in progress	.1	(.1)	(.2)	1.4	1.3	5.7	(2.6)	(4.1)	23.3	(21.4)	(1.5)	.8	2.7	.3
Increase (decrease) in working capital	.8	(2.7)	2.5	3.8	(1.8)	(1.0)	10.2	(9.8)	31.0	(17.3)	14.6	10.9	41.2	5.1
Debt repayment	18.0	8.7				2.8	14.2	16.0				11.4	71.1	8.7
Deferred tax repayment							1.4			10.0	4.1	.3	15.8	1.9
Deferred charges	(2.4)	.1	(.1)	.1	3.1	5.2	.3	7.1	4.2	2.2	(.9)	(16.1)	2.8	.4
Investments made	6.3	13.1			21.4		1.5	2.5	15.4	32.5		18.3	111.0	13.6
Losses on operations					2.4	1.5	1.7			38.6	5.7		49.9	6.1
Other uses	2.0	.4									.1	1.5	4.0	.5
Total uses	48.6	24.8	28.8	60.4	52.4	86.6	44.3	15.0	211.8	105.6	90.0	47.4	815.7	100.0%

EXHIBIT XX.1 (a)

Supersonic Transport Financing Study

SUMMARY OF DATA FOR
SELECTED AIRLINES, 1965-1968

(Dollars in millions)

	American Airlines		Eastern Air Lines		Northwest Airlines	Pan American Airways	Trans World Airlines	United Airlines	Total
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars
Profits retained	\$124.2	15.7	\$69.9	10.5	\$42.2	17.4	\$59.1	7.7	\$205.8
Depreciation charges									
Flight equipment	106.3	21.1	37.9	35.7	32.1	13.3	221.1	22.1	577.4
Ground equipment	30.1	3.6	28.6	4.3	6.9	2.9	21.6	2.6	187.2
Long-term debt increase	310.7	30.5	242.0	36.3	91.0	37.8	34.0	4.1	777.7
Tax payments deferred	71.3	4.0	17.3	2.6	20.6	4.6	21.7	2.2	130.9
Investments liquidated	72.9	9.2	28.3	4.3	17.7	7.4	58.4	16.6	277.3
Preferred stock					10.6	4.4			10.6
Common stock	1.8	.2	15.3	2.3	14.1	5.9	58.6	7.2	139.8
Other	12.2	1.5	26.3	4.0	5.6	2.3	3.4	.5	71.5
Total sources	\$789.5	100.0	\$665.6	100.0	\$240.8	100.0	\$415.7	100.0	\$1,811.3

Sources:

Uses:

	American Airlines		Eastern Air Lines		Northwest Airlines		Pan American Airways		Trans World Airlines		United Air Lines		Total
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars
Purchase of flight equipment	\$478.2	60.7	\$428.6	69.4	\$135.1	51.1	\$343.2	52.7	1	5.7	1,111.0	71.0	\$2,318.5
Purchase of ground equipment	50.5	6.4	46.4	7.6	10.9	4.5	39.1	5.4	25.7	5.8	27.8	1.9	201.4
Increase (decrease) in working capital	88.1	11.2	11.9	1.9	3.9	1.6	(5.7)	(1.2)	4.2	1.1	(4.2)	(.5)	16.2
Debt repayment	29.6	3.7	31.0	4.7	46.3	19.1	1,229.6	26.3	7.4	1.7	1,111.0	71.0	2,425.6
Losses			67.3	10.2					29.7	6.1			117.0
Payment of deferred tax			17.3	2.6					15.4	3.4			32.7
Retirement of preferred stock	34.3	4.3			20.4	8.5							54.7
Investments made	79.7	10.1	25.5	3.9	27.7	11.5	114.8	16.3	111.0	13.8	1	1.1	433.8
Other	29.1	3.6	36.6	5.5	6.5	2.7	45.9	6.3	1	1.1	1,111.0	71.0	1,304.5
Total uses	\$789.5	100.0	\$665.6	100.0	\$240.7	100.0	\$2,277.5	100.0	\$115.7	100.0	\$1,111.0	100.0	\$4,630.4

The apparent acceptance by the carriers and the financial community of the desirability of using long-term loans as a permanent part of the carrier's capital structure, since the cost of debt is generally lower than the cost of equity.

2. The apparent use, in general, of about 40% of internally generated funds to finance equipment needs. The substantial cash flow from depreciation has been a major source of these internal funds in every case.

3. The increasing use of or intention to use, revolving credits which are either extended and paid down or converted into term debts on a basis consistent with the tax schedules.

4. The use, in the case of many foreign carriers, of Export-Import Bank loans guaranteed in total or in major part by home governments, supplemented by credit extended by airframe and engine manufacturers until loans are approved.

5. The consensus among the carriers that a debt equity ratio of 1.5 to 1 is the practical maximum acceptable, if dividends are to be paid and future financing made easier.

6. The use by a number of carriers of convertible or subordinated debentures and of preferred stock at times when the debt equity ratio makes it desirable to do so.

Although pension funds are emerging as financing sources and tend, in the process, to depress rates, they also tend to conform to the 1.5 to 1 debt equity standard as administered in any given loan.

VI. FINANCIAL COMMUNITY ATTITUDES TOWARD FINANCING AIRCRAFT MANUFACTURERS AND CARRIERS

than as a "plus factor" in the manufacturer's total credit strength.

(2) The Commercial Business of Aircraft Engine and Airframe Manufacturers Is Regarded by the Financial Community as Relatively "High Risk"

Bank officers and insurance company executives interviewed during this assignment almost invariably gave at least one, and in some cases several, instances of high manufacturing losses attributable to commercial programs. Cases in point are:

The Convair 240's

The Martin 202's

The early models of the Lockheed Constellation

The Lockheed Electra

The Convair 880's and 990's

The Douglas DC-8's

It was noted also that, in some of these cases, the manufacturer was able to recover part or all of his losses by profits earned on later models of the same basic type of aircraft. Nevertheless, the manufacturers and their sources of financing suffered extended periods of concern before these programs, in total, were finally "bailed out."

Some members of the commercial banking community pointed out the difficulty of maintaining an accurate measurement of the progress of a

manufacturer's commercial program, because of a general inability to allocate substantial overhead items equitably between the commercial business and government contracts. They noted, as well, the tendency for manufacturers to seek commercial business most aggressively (and to price this business accordingly) during periods of low or declining military activity. As a result, they said, the commercial business thus generated was required to carry an inordinate amount of company overhead which, typically, was then running at a high level.

In addition to this potential source of added cost, the manufacturer runs the risk of incurring some or all of the unanticipated costs--design changes, faulty break-even estimates, etc.--enumerated in Chapter IV of this report. The existence or prospective existence of a competitive model with similar economic and performance characteristics was also cited as a significant element of risk in commercial aircraft programs.

The commercial bankers' attitude toward a given commercial program becomes more favorable as the program moves past its research and development phases and as the airlines book firm orders and commitments. At this point, the banks will stand ready to finance the expansion of in-process inventories, or at least to take them into account as "bankable" assets worthy of inclusion in the total credit evaluation processes. Even at this point, however, they recognize, by virtue of such experience as the wing collapses on the early Martin aircraft and wing vibration in the Lockheed Electras, that the manufacturer may still be subject to substantial losses.

In summary, members of the financial community find, in their own experience, what they believe to be good reasons to regard the commercial business of engine and airframe manufacturers as "high risk," relatively unsuitable for debt financing.

- (3) The Investment Community Generally Requires the Manufacturer To Rely on His Own Equity Resources To Support the Research and Development Phases of Commercial Equipment Programs

Because of (1) the manufacturers' demonstrated inability to forecast accurately the total outlays required for basic research and early design and development costs, and (2) the risk that all such outlays may fail to produce an aircraft acceptable to the commercial carriers, the investment community universally regards all such costs as unacceptable for outside credit support; furthermore, they tend to "score" such expenses, if they are capitalized on the manufacturer's balance sheet, as intangibles, deductible from book net worth. To this extent, then, such outlays reduce the equity base calculated and used by the banker as a guideline for his line of credit.

- (4) The Manufacturer's Cash Flow Plays an Important Part in All Credit Evaluations

Commercial bank debt is extended to engine and airframe manufacturers almost entirely on a self-liquidating basis; i.e., against specific orders and/or total backlog amounts. The cash flow from liquidation of backlog, in the manufacturer's case, is therefore more important to the commercial banks than cash flow from depreciation of plant and equipment.

- (5) The Typical Form of Commercial Bank Lending Is as an Open Line of Credit

In view of the self-liquidating nature of bank lending to manufacturers, loans are typically made under an open line of credit, with a stated maximum, usually secured by the total, general credit, and financial reliability of the company, rather than by specific assets.

- (6) Bank Credit Is Generally Extended to the Major Manufacturers at the Prime Rate

As a reflection of the bank's primary dependence on assured government invoices and work in process, the manufacturers are generally able to obtain bank loans at the prime rate. The financing required by a commercial venture is in effect extended at the prime rate if the total "military" guarantee is adequate to cover the commercial risk.

- (7) Sources of Outside Financing Require Relatively Little Technical Information with Regard to Proposed New Commercial Engines or Aircraft

Inasmuch as the banks and insurance companies give little or no weight to manufacturers' commercial programs until there is tangible evidence of their acceptance by the airlines, they tend to pay minor attention to early claims for or projections of aircraft performance. Put another way, they rely largely on the commercial airlines for such technical evaluation as they think is required.

2. ATTITUDES TOWARD AIRLINES

(1) There Has Been Substantial Improvement in the Major Airlines' Credit Standing during the Postwar Era

Early in the postwar period, the airlines, in general, were dependent on equity and short-term (bank) financing for support of their equipment acquisition programs. In the main, each new equipment program was subjected to close scrutiny by the commercial bankers, if the program was regarded as "bankable" at all, and each program was required to demonstrate, in effect, its ability to sustain the debt service charges which the equipment loans would call for.

In more recent years, the airlines have demonstrated continuing earning power and substantial strength as viable "going concerns." The major U.S. trunk carriers are now measured, in respect to their credit standing and investment status, in an overall sense, without particular concern to any given equipment program. In other words, it is recognized by the financial community that a large airline must maintain a fleet of aircraft which is sufficiently modern and efficient to meet its operating requirements and to hold its own against competition. It follows, then, that such a fleet will be appropriately balanced among the various types of aircraft which fit its route structure and traffic considerations. It follows, further, that such a fleet will be more or less continually in a process of acquisition and disposition. In the case of the larger airlines, therefore, a decision to commit the company to a given acquisition program has had considerably less impact on its balance sheet and profit and loss statement in recent years than was the case when its

fleet consisted almost entirely of a single type of aircraft.

Evidences of the airlines' improved credit and investment status are to be found in:

- . Revolving and term bank loans granted at or slightly above the prime rate
- . Term loans and long-term debenture issues secured as general obligations of the carriers rather than by liens against specific pieces of equipment
- . Acceptance by the banks and insurance companies of increasingly higher debt-equity ratios
- . Competition among the commercial banks and insurance companies for airline financing opportunities
- . The ability of the airlines to "bootstrap" their postwar growth with relatively little dependence on new equity or equity-type financing

(2) Historical Earnings and Demonstrated Cash Flow Are the Major Determinants of Carrier Credit and Investment Status

Bank and insurance company officers indicate that they tend to look more carefully at an airline's record of earning power and cash flow, in respect to a request for loan or investment funds, than they do to projections of earnings and cash flow, even though the latter may be tied to the specific equipment program which is the basis for the application.

In summary, the financial community tends now to take major new equipment programs "in stride"; i.e., to regard each one as a continuing series of such steps, each of which generates its own cash flow and can therefore be regarded as self-liquidating.

The banks, insurance companies, and other sources of capital obviously take other credit factors into account; e.g., quality of management, operating ratios, load factors, traffic density, route structure, and long-term outlook, in roughly the order listed.

(3) Nevertheless, a Major New Equipment Program May Have an Important Bearing on a Carrier's Credit

Despite the general tendency by the financial community to regard equipment acquisition as a continuing and essentially self-liquidating basis for credit and investment demands, loan and investment officers exercise due diligence to make sure that a proposed new equipment program does indeed fall within this general concept of acceptability. Several of them were quick to point out in the course of this study that an airline's overdependence on the delivery and/or performance of a given aircraft model has in the past and easily could in the future lead it into financial difficulties. They have very much in mind the BOAC experience with the early Comets, repercussions of the Electra failures on American, Northwest, and particularly Eastern, and the disappointments and traffic losses incurred by a number of carriers with regard to their Convair 440 and 440 programs, as well as the uneconomic route and segment application which Capitol made of its Viscount fleet.

(4) Debt Service Coverage Is Measured Principally in Terms of Cash Flow

Amortization schedules, as established for term bank loans, are more often than not geared to a specific percentage (generally 75%) of anticipated depreciation. The sum of (1) the remaining 25% of depreciation and (2) pre-interest, pre-tax income is regarded as the source of cash available for interest payments.

(5) The Maximum Amount of Bank and Long-Term Debt Is Usually Established at 75%, or Less, of Net Depreciated Book Value of Equipment

The sum of bank and longer term debt is rarely allowed or planned by the creditors to exceed 75% of net depreciated book value of flight equipment. The pattern of total amortization usually provides for relatively rapid repayment of term bank loans, typically over a 5- to 7-year period. The pattern follows, in effect, the declining curve of net depreciated tax values for an equipment program--with provision for substantially lower rates of annual amortization, thereafter, applicable to the longer term insurance company or other institutional debt.

Actually, of course, with equipment acquisition running along to some extent as a continuing process, specific equipment programs will spread out over a period of years and, furthermore, two or three programs will frequently overlap for a given carrier. In some cases, therefore, the airlines have supported these continuing and overlapping programs for considerable periods of time with revolving bank credit, some part of which may then be converted

into term loans (subject to the more or less synthesized amortization pattern described above).

Similarly, the long-term debt typically extends over a period of 20 to 30 years or more, so that it is difficult to relate the amortization of these long-term obligations to any one or more identifiable equipment programs.

(6) The Debt-Equity Ratio Is Also a Prime Determinant of Total Amount of Bank and Long-Term Debt

The consensus among banks, insurance companies, and investment bankers appears to be that a debt-equity ratio of 1.5 to 1, or less, is readily acceptable by most of the members of the financial community. Several of them observed, however, that their own institutions had been party to a number of situations in which total obligations were allowed or planned to exceed this amount, at least for a short period of time.

Although the 1.5 to 1 ratio was the most frequently cited as a credit guideline, there appears to be some difference among the lending and investment institutions in the definition of "equity." Some of the insurance companies include subordinated and convertible debentures within their definition of "debt." The commercial bankers, on the other hand, regard such issues as part of the carrier's equity base. Similarly, the insurance companies regard deferred federal income taxes as a debt-type obligation while the bankers tend to measure these reserves as an equity-equivalent.

(7) Other "Rules of Thumb" Are Applied with Lesser Emphasis

Some commercial bankers measure total "allowable" bank debt against guidelines relating to the airline's operational requirements. One such guideline cited during interviews was that short-term or revolving bank credit ought to be no more than 5 times monthly cash operating expenses.

(8) Definitions of Default Vary among the Principal Categories of Lenders and to Some Degree within These Categories

Typically, the definitions of default in airline loan agreements and indentures are related to the debt-book value relationship noted above, although the prescribed ratio (e.g., 65% to 75%) will be different from case to case.

The agreements and indentures may also include references to minimum working capital. One such requirement for a bank loan agreement, cited during this study, was that working capital should not fall below 20 days of cash operating expenses. In other cases, the proscriptive has run as high as 30 days of cash operating expenses.

The more usual case, for both loan agreements and indentures, is that no specific chattels are provided on flight equipment. Conversely, however, each type of lender will generally require the establishment of such chattels in the event that any other lender obtains them.

Finally, in those cases in which both banks and long-term lenders are represented, each will usually require that if the airline is in default for any reason with respect to its obligations to one lender, then it is also in default with respect to the other.

- (9) Bank Loans for Major Carriers Are Currently Written at or Near the "Prime Rate"; Interest Rates on Long-term Obligations Tend To Vary, with the Money Market, at Slightly Higher Levels

Commercial bankers expressed some reluctance during the course of this study to reveal the rates at which they are currently granting revolving and term loans, although some data on this point are contained in the exhibits in Chapter V. Such expressions as were obtained indicate that some of these loans carry the prime rate and the balance are made at modest (generally one-quarter of 1%) premiums above the prime rate.

The interest rates established for long-term obligations reflect the circumstances as of the time of the negotiation. In the recent cases applicable to major airlines with good basic credit ratings, the going rates in the long-term money market have been the major determinants of coupon rate.

- (10) Underlying Government Support for a Strong Commercial Air Transport System Is an Important though Intangible Factor in Airline Credit Status

Very few of the respondents initiated any comment with regard to the part played in their

credit analysis by government policy in respect to carrier support and subsidies. By and large, they acknowledged that the provisions of the Civil Aeronautics Act, which provides for such subsidies under certain contingencies, are "at least in the backs of their minds" in any credit negotiations or evaluations. The applicability of this expressed government policy has more direct impact, of course, in the case of the feeder and smaller airlines.

- (11) The Carriers Now Have a Considerable Degree of Control over and Flexibility with Regard to Capital Structure

As a result of their demonstrated earning power and improved credit standing, the airlines are able to exercise a significant degree of financial management. They are able to make the choice between primary dependence on short-term or long-term debt, or to take some position of balance between the two as a basis of support for their equipment acquisition programs and general business growth.

- (12) The Balance between Short-Term (Bank) and Long-Term (Largely Insurance Company) Debt Varies Appreciably among the Carriers

In general, it appears that the commercial banks not only accept but appreciate the need for a significant portion of airline credit to be supplied in the form of longer term obligations. They tend to regard the latter debt as underlying the general, continuing needs of the carriers' operations, including ground support and fixed facilities which are depreciated over relatively long-term periods. They tend to relate their own participation to shorter term

requirements, largely involving flight equipment, training, and introductory costs.

This commercial bankers' concept by no means, however, calls for a periodic "clean up." The almost continuous modernization and expansion of fleets, in which the carriers have been engaged since World War II, have justified, from the bankers' point of view, the use of revolving credit for extended periods, and the overlapping (or renegotiation) of term loans. Unless a carrier is relying heavily on long-term debt, it will be "out of the banks," therefore, only in periods of relatively low aircraft acquisition and assimilation, when its own, internally generated cash flow can provide for both amortization of remaining (long-term) debt and payments on new aircraft.

The insurance companies, however, are tending toward greater willingness to support what may be regarded as short-term but nevertheless continuing or "rolling" needs of the airlines.

There appears to be a middle ground of airline credit requirements, relating to intermediate or short-term cash needs, in which both the banks and the insurance companies are willing to participate and in which they compete, to some extent, for lending opportunities.

The majority of commercial bankers are currently willing and, in some cases, prefer to carry more than half of a carrier's total indebtedness, so long as the latter's cash flow is such as to provide adequately for amortization of term loans or for reasonable limits on revolving loan requirements.

The insurance companies also appear to be willing to support more than half of a carrier's total obligations and, in some cases, have been the predominant source of outside funds.

The financial community's relationships with American and United serve to demonstrate these divergencies of attitude, not only as indicated by the financial community but also as reflected in the financial policies of the carriers themselves.

1. American Airlines Relies Heavily on the Availability of Long-Term Debt

American depends almost entirely on long-term debt as the source of funds required in excess of cash generated internally. It has made minimal use of bank loans.

This policy is supported, in principle, by Pan American and by the insurance companies on which American depends.

2. United Relies Heavily on the Availability of Revolving and Term Bank Loans

United has financed about half of its cash requirements from outside sources by use of revolving bank loans, typically with an option to convert to 5-year term loans.

This carrier, from 1955 through the end of 1963, did not convert any of its revolving credits to term loans. Instead, it utilized some of its heavy cash flow to pay off \$71.0 million of a total of \$156.0

million in revolving credits. Early in 1964, United paid down the remaining \$85.0 million of revolving loans to a balance of \$42.0 million by applying part of the proceeds of a long-term loan of \$60.0 million, negotiated at favorable rates.

On balance, United appears to use short-term funds to finance that portion of equipment acquisition programs which can be rapidly repaid and to arrange gradual draw-down of long-term funds to meet those portions of the equipment acquisition programs which occur before revenue generating equipment is delivered.

The carriers, other than American and Pan American, appear to lean toward United's approach, as do the banks. The latter appear to go along with this flexible approach on the basis of the heavy cash flow provided in the initial stage of equipment acquisition programs.

Except in unusual cases of airline financial distress or complications (e.g., Eastern, currently, and TWA, a few years ago), the banks and insurance companies do not appear to collaborate, in a formal sense, in their provision of financial support to the carriers. Each type of institution is well aware, however, of the extent and form of the other's participation in any given case. It reviews the airline's loan applications and total financial planning, therefore, with full appreciation of the need for an integrated approach to determination of debt service requirements.

(13) The Airframe Manufacturers and Oil Companies Have Contributed Minor Amounts to the Airlines' Financial Support

At least one manufacturer has taken an active part in the formulation of financial arrangements by which an airline has been enabled to buy its equipment. In this, and in other cases, the manufacturers have also participated directly by accepting, for their own account, modest amounts of airline notes or debentures, principally from the smaller airlines.

A number of suppliers of aircraft fuels and lubricants have also extended minor amounts of credit to certain airlines, in return for notes or debentures.

Airframe manufacturers have also contributed their own financial or credit resources to the airlines' financing needs by:

- . Granting favorable "trade-in" terms and allowances
- . Leasing, rather than selling, new aircraft

(14) The Financial Community Regards Aircraft Leasing, Generally, as a Form of High-Cost Financing, Reflective of Poor Credit Status of the Participating Airline

Leasing companies, in general, support their operations with substantial amounts of bank credit. As one banker described the typical commercial bank's attitude: "Leasing doesn't make any sense at all, from our point of view. If the leasing airline can't get bank

credit directly, there is little justification for our making a comparable loan to a leasing company which must depend, just as we would, on the airline's ability to generate cash for repayment."

Both banks and insurance companies generally regard rental contracts as the equivalent of long-term obligations in their calculation of debt-equity ratios.

(15) U.S. Commercial Banks Are Willing To Support Aircraft Acquisitions by Foreign Carriers, under Certain Conditions

Usually under guarantees by the Export-Import Bank, several of the larger domestic banks have extended substantial amounts of credit to foreign carriers to support new aircraft programs. Other conditions and terms of these loans vary substantially from case to case. In some instances, the banks report that they have obtained secondary guarantees from the governments under which the foreign carriers operate, frequently on a nationalized or monopolistic, government-supported basis. Other considerations and covenants reflect currency exchange ratios, currency exchange restrictions, etc., all of which must be "tailored" to fit the special circumstances of the particular loan involved.

Some foreign carriers have also received financing in the form of extended terms or credit granted by U.S. manufacturers. To some extent, of course, this form of financing is supported by U.S. banks and other lenders through their loans to the domestic manufacturers.

* * *

The attitudes of those elements of the financial community interviewed toward the manufacturers and the airlines are felt to be representative of the community as a whole. The institutions and insurance companies contacted are among the largest in the country and have had, in general, intensive exposure to each of the sectors involved, particularly the airlines.

VII. APPLICABILITY OF PAST FINANCING PRACTICES
TO THE SST PROGRAM

The question of whether the trends and practices uncovered during the course of this study can be applied to the financing requirements of the various sectors in the SST program is discussed in this chapter.

1. AIRLINE FINANCING SOURCES INDICATE THAT THEY
WILL PROBABLY PARTICIPATE IN SST FINANCING IF
THE ECONOMICS OF THE PROGRAM ARE SOUND

Airlines have emerged, in the minds of the financial community, as good risks. The general improvements in management and financial planning and control capability have combined to raise the regard in which the carriers are held. Since the carriers, in general, have the confidence of the financial community, the emphasis of analysis in the SST program will apparently be placed on the prospective profit performance of the aircraft. Two appraisal elements are involved in evaluating this question.

(1) The Need during the Flight Test Program for
the SST To Demonstrate Satisfactory Seat-
Mile Economics

The need for the SST to produce seat-mile cost approximate to current levels was repeatedly stressed during the course of this work. The information currently available to the financial community casts doubt on the capability of the SST aircraft, as currently proposed, to accomplish this objective. It is, of course, recognized that improvements will be made in anticipated seat-mile costs as the design program proceeds. However, the incremental

financial requirement to be imposed on the carriers, together with the risk implied, impels the financial community to seek a greater assurance of certainty on satisfactory seat-mile costs than previously existed. It would appear, at this time, that a successful flight test program is necessary if the definitive assurances required are to be provided.

(2) The Need for the Carriers To Demonstrate
Their Ability To Fill Enough SST and Total
Fleet Seats To Make the New Aircraft
Profitable

A general feeling prevails that subsonic aircraft were introduced somewhat early relative to the ability of the market to absorb profitably the added capacity made available. Although the initial impact of this reaction has been eliminated, a possible repetition of the experience is anticipated. As a consequence, it appears that the market forecasts of the carriers and of the industry sources will be reviewed more closely than has been the case previously. It appears that particular emphasis will be placed on the projected ability of the economy to provide enough business-oriented travel to support the market needed for profitable operations by SST aircraft.

In the event both of these questions are answered satisfactorily, airline financing sources indicate a general willingness to participate in the financing of carrier requirements within the limits of the debt-equity ratios previously cited. The satisfactory resolution of these questions entails analyses geared to the profit prospects of the SST, including the effect, in this respect, of equipment downgrading. This prospect suggests strongly that the lending institutions involved will adopt an

approach which concentrates on the impact of SST acquisition and operation as a separate and distinct program. Essentially, it appears that the lenders will adhere to the concept that the SST equipment program is being financed, rather than the total corporate needs of the carrier, as they maintain has been the case in the past.

2. AT THIS TIME, A POSSIBLE FINANCING PATTERN HAS BEEN IDENTIFIED FOR APPLICATION TO THE SST NEEDS OF THE MAJOR CARRIERS

The interview process and analysis of past trends suggest a tentative financing plan for airline SST acquisitions. This concept is based on practice and experience and contemplates the future existence of a joint program analysis and loan negotiation effort on the part of the various lending institutions. This plan, of course, assumes that the basic economics of the SST (as described in the first section) have been established.

The lending sources are impressed with the size of the carrier's potential financial commitments to the SST program as well as with the relatively short acquisition span involved. These reactions, coupled with the presence of reservations on the risks, lead to the feeling among the two types of lenders that close coordination of their efforts will be required.

In the past, the banks and insurance companies have not, in general, jointly negotiated loan agreements with individual carriers. The current appraisals and reservations cited lead both to feel, at this point, the probable need to abandon past practice and, in its stead, to coordinate their analyses and loan negotiations closely. The following program assumes that this coordination will occur.

(1) Revolving Credits in One of Two Forms Will Probably Be Utilized by the Banks in Their Portion of the Financing Effort

The commercial banks appear to be willing to continue the use of revolving credits by the carriers. These credits appear to be on prospect in one of two forms, subject to the repayment requirements of the insurance companies: (1) the credits may be extended out several years after the expiration of the initially negotiated period; or (2) they may be converted at expiration point to term loans.

In the former event, the carrier will be in the flexible position of paying down the credits at a rate consistent with the total demands being made on its cash flow. In the latter, the carrier would make fixed payments annually over the 7-year tax depreciation period.

(2) The Insurance Companies Appear To Be Giving Consideration to Advancing the Effective Point at Which Repayments to Them Will Begin

In the past, insurance company repayment schedules have generally begun after discharge of the bank term loan in those cases when the latter was employed, or about 7 years after the peak of the equipment cycle. The extent of the risk in prospect, however, would lead the long-term lender to seek some added security from the SST program. This security is most readily found in the high cash throw-off of the tax depreciation period. The insurance companies, as a consequence, are considering the use of sinking fund provisions which would require the carriers to set aside funds in years 4 to 7 of the

tax cycle for insurance company repayments. Although the formal repayment program would begin in year 8, its requirements would have been anticipated. This approach would cause an effective overlapping of bank and insurance company payments in years 4-7. The sinking fund requirement would be lifted as the carrier demonstrated its continuing ability to repay after year 8. This provision, if utilized, would have a bearing on the form of revolving credit acceptable to the banks.

(3) The Formal Repayment Schedule Is Anticipated To Encompass an Extended Period Whose Precise Term Will Be Influenced by the Carrier's Desires

Insurance companies prefer maturities which extend more than 20 years and, in practice, grant loans for periods well in excess of that period. The same flexibility apparently will prevail in SST financing. The actual term would appear to be more in the carrier's hands, assuming its financial stability, and dependent on its concept of the best balance sheet structure for it.

(4) Rates for Both Bank and Insurance Company Loans Are Expected To Be in Line with Past Practices

The bank loan portion of the financing would appear to be negotiable at or slightly above prime rates. Insurance company loans will, as at present, apparently be extended at 1/2% or more over the prime rate. Both points obtain only if the reservations on economics are satisfactorily resolved.

(5) No Evidence Has Been Uncovered Which Indicates the Prospect of a Change in the Application of Existing Debt Equity Standards

In general, both types of lenders prefer to confine airline debt equity ratios to a peak of 1.5 to 1. The interview process uncovered no opposition to a continuance of this standard, on the assumption that satisfactory profit prospects exist at the time financing commitments are made.

In the event that each of the reservations cited is resolved to the satisfaction of the lenders, the carriers would appear to be in a position of financing 60% of their requirements in a ratio of bank and insurance company funds consistent with the financial planning objectives of each.

The ability of the airlines to finance SST acquisitions, therefore, rests on the assumption that the carriers will, between now and the commitment time, have reduced outstanding debt and/or increased their equity base sufficiently so that they can obtain an adequate amount of external funds.

(6) The Possible Effect on Debt Equity Ratios at 1970 of Another Cycle of Subsonic Equipment Acquisition Requires Appraisal

The carriers have, in general, been repaying the debt contracted during the acquisition of subsonic turbine equipment. The interview process has, however, uncovered intentions on the part of three carriers to purchase significant amounts of additional subsonic equipment.

The projected equipment acquisition plans supplied to Booz, Allen & Hamilton indicate the following tentative capital equipment plans:

Carrier	Equipment Purchase Plans (1964-1966) (Dollars in Millions)
American	\$344.0*
Pan American	453.0*
Trans World	341.0**

* Based on assumptions supplied by the Department of Commerce.

** Derived from carrier's current 5-year capital plan.

Although the outlays listed are tentative, they do supply some order of magnitude which can be used in assessing the need for further subsonic equipment. Since the outlays indicate the prospect of further significant purchases of subsonic equipment, the impact of such additions on 1970 debt equity ratios should be appraised.

Since specific projections of carrier equipment needs, earnings prospects, and future financing requirements were beyond the scope of this study, this point is made only to indicate the need for the consideration of the effect of subsequent subsonic equipment purchases upon the carriers' ability to finance SST acquisitions.

3. IN THE CASE OF MANUFACTURERS, THEIR PAST EXPERIENCE IN FINANCING COMMERCIAL TRANSPORT PROGRAMS PROBABLY IS NOT APPLICABLE TO THE SST PROGRAM

The point has been made earlier that financing for postwar transport programs has occurred in two stages: (1) the development cycle, which has largely been carried by internally generated funds, and (2) the production cycle, which has been financed to a significant extent by general short-term bank obligations. In the latter case, the financial community has indicated that the manufacturers' overall credit, supported in large part by government contracts, has been considered in making such loans--as opposed to any security associated with the commercial program as such.

Applying these principles to the SST program points up some significant differences. In the first place, the magnitude of the funds required for the development cycle is substantially more than anything experienced in past programs--so much so that considerable doubt can be raised as to the manufacturers' willingness and/or ability to generate the necessary funds from internal sources.

Secondly, in respect to the production cycle, the SST program is of such a magnitude that it would probably represent a substantial percentage of the company's total commitments, particularly in the case of the airframe manufacturers. Thus, the reliance which lending institutions have placed in the past on government (noncommercial) programs to carry the risks of the loans would probably not apply in the case of the SST program.

This study has been concerned solely with past financing practices and their applicability to the

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SST program, if any. The questions of whether and how the SST program can generate financial support and the extent of government support of the program were clearly beyond the scope of this study and are being considered separately by the Department of Commerce. Suffice it to say, therefore, that the financing patterns established in the postwar period with respect to airframe and engine manufacturers are not necessarily, and probably will not be, applicable to the SST program for the reasons cited.

SECTION III

AN ANALYSIS OF FOREIGN
AIRLINE EQUIPMENT FINANCING AS
A GUIDE TO ACQUIRING SST AIRCRAFT

SELIG ALTSCHUL
aviation advisory service

17 WALL STREET
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AN EVALUATION OF
FOREIGN AIRLINE CAPABILITIES
TO ACQUIRE SST AIRCRAFT

A Report Prepared
Exclusively For:

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Office of the Secretary
Washington, D.C.

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TABLE OF CONTENTS

SECTION I

Historical Review Of Financial Support For Selected Airlines

Air France	p. 1
Alitalia	p. 5
Air-India International	p. 8
British Overseas Airways Corp.	p.13
Deutsche Lufthansa	p.17
Japan Air Lines	p.21
KLM - Royal Dutch Airlines	p.25
Qantas Empire Airways, Ltd.	p.32
Sabena Belgian World Airways	p.35
Scandinavian Airlines System	p.39
Swissair	p.44

SECTION II

U.S. Assistance In Financing Foreign Airline Aircraft Purchases

The Export-Import Bank Of Washington	p.48
International Bank for Reconstruction and Development (World Bank)	p.49
International Finance Corporation	p.50

SECTION III

An Analysis Of Foreign Airline Equipment Financing As A Guide
To Acquiring SST Aircraft

Past Patterns	p.51
Emerging Patterns	p.54

SECTION I

HISTORICAL REVIEW OF FINANCIAL
SUPPORT FOR SELECTED FOREIGN AIRLINES

AIR FRANCE

The Company

Compagnie Nationale Air France, organized in 1948 as successor to the old Societe Nationale Air France under a special law, is in effect an arm of the French Government, which nominates at least one-half of the Board of Directors (Conseil d'Administration) and holds virtually all of the capital stock.

Capital Stock. The capital stock of Air France remained unchanged from 1948 through 1962 at 100 million new francs (\$20.4 million). In 1962 the capital stock issued was increased to 500 million new francs (\$102.1 million). Although by law the state is required to hold only 70% of the stock, the actual distribution of the stock at the beginning of 1961 was as follows:

State	96.8%
Caisse des Depots et Consignations*	1.0%
Compagnie Generale Transatlantique**	1.0%
Private persons, local governments and chambers of commerce	1.2%

Notes: *A government financial agency

**A shipping company in which the government own approximately 55% of the stock and controls about 75% of the votes in stockholders' meetings.

The State, as such, has received no dividends on the stock held by it, although under the

decree of September 30, 1953, shareholders other than the State receive an annual dividend of 5% of the par value of the shares. This dividend is guaranteed by the State and entered among the general charges of the company.

In appreciating the growth of investment in Air France, account should be taken of the declines in the value of the franc, the most severe being those of 1957 and 1958.

Long-Term Debt. Air France has borrowed heavily from the French State and government financial institutions. At the 1959 year-end, total borrowings from Government sources were as follows:

State	\$82,124,000
Caisse des Depots et Consignations	17,264,000
Caisse France d'Outre Mer	<u>274,000</u>
TOTAL	<u>\$99,662,000</u>

In addition, the company was indebted to the High Commission of France in Indochina in the amount of O.F. 32,000,000 (\$925,068). This item is not listed after 1955 and there is no indication whether it was repaid or cancelled.

Details of Air France's indebtedness to the State and government agencies since 1950 are not available. It is known, however, the indebtedness to the State has increased substantially since the 1959 yearend.

At December 31, 1962, the total long-term debt of Air France was reported at 920.3 million francs (\$187.8 million).

The rate of interest on Air France's indebtedness to the State has varied, but is currently reported to be 4.5%.

The State is authorized by law to extend guarantees to the borrowings of Air France, but complete information on guarantees actually extended is not available. In 1957, the French government guaranteed the loan by the Export-Import Bank of Washington of \$78.5 million to Air France. This loan is for a seven-year term and at 5.5% interest and is being amortized on schedule.

Direct Subsidies

Air France has received direct subsidies from the French Government for its international services under a succession of contracts. The contract of June 8, 1957, which was in force until the end of 1960, provided in effect for a state guarantee of subsidy to cover at least 90% of the operating losses on international services and additional subsidy to cover any remaining loss (after payment of the regular subsidy) in excess of O.F. 300 million. There was provision for recapture of part of any profit that the airline made; under a supplementary agreement of August 7, 1959, which was applied to the subsidy accounts for 1958 and 1959, the State was entitled to recapture the subsidy in the amount of one-half of the over-all operating profits of the company (including profits from the operation of the non-subsidized services). New contract for 1961 and subsequent years provided for continuing subsidies.

The amounts of the direct subsidy received by Air France since 1963 have been as follows:

Year	Amount of Direct Subsidy	
	French Francs (000)	U.S. Dollars (000)
1953	O.F. 2,704,000*	\$ 7,733.
1954	3,384,919	9,670.
1955	2,908,153	8,308.
1956	3,204,640	9,155.
1957	3,969,084	9,450.
1958	4,751,894	11,314.
1959	2,926,000	8,966.
1960	N.F. 54,600	11,138.
1961	53,000	10,783.
1962	110,000	22,380.

*Including amounts of O.F. 1 billion and 580 million for 1953 and 1954, respectively, which were granted to the company retroactively in subsequent years and entered in the company accounts for these subsequent years.

#Converted into U. S. dollars at prevailing exchange rates for each year.

Provision of Equipment

The Breguet 763 contract. Under a 1951 contract, the French Government reimbursed Air France part of the price of 12 Breguet 763 transport aircraft which were ordered by the government. The government has agreed to pay Air France 20% of the purchase price of the aircraft and initial spares, and of certain incidental expenses. Since the payments are made in installments, Air France also receives interest on the unpaid portion of the amount. The initial amount of this commitment, with interest, was 39.1 million new francs (8.0 million). This obligation is reported to have been liquidated.

It should be noted that the special arrangement between Air France and the French Government for the purchase and operation of Breguet aircraft may be regarded as more of a subsidy to the manufacturers than to Air France, since the latter regarded the aircraft as uneconomical and would not have undertaken their operation without aid from the Government.

Research and development of commercial transport aircraft.

Information as to the total amounts expended by the French Government for research and development of new types of commercial transports is not available. Many of the aircraft resulting from these efforts have not proved successful in commercial operation. French State budgets have provided almost \$1 billion from 1953 through 1961 for civil aviation prototype testing and evaluation. Included in these amounts were funds for the development of the most successful French transport aircraft -- the Caravelle. Such funds aggregated about \$55 million from 1955 to 1961.

Sud Aviation, the manufacturer of the Caravelle, is wholly-owned by the government. Its capital was increased from O.F. 440 million (12.57 million) in 1956 to O.F. 6,990 million (\$142.4 million) in 1959. It also received a loan of O.F. 5 billion from the State Treasury which at the 1960 year-end was equivalent to \$102 million. The State has further guaranteed to Sud Aviation the sale of 150 Caravelles. Since this aircraft has also been purchased by a number of other airlines, the expenditures for the development of Caravelle cannot be regarded as primarily a subsidy to Air France.

The participation of the French Government through Sud Aviation, in the building of the supersonic transport, the Concorde, is well known. This was a joint project with the British Government through the British Aircraft Company. The total cost of development, tooling and production of prototypes has been variously estimated at from \$500 to \$784 million. The British are reported as wishing to slow down this program. The French have indicated the desire to push forward in this activity. In fact, the French National Assembly only a few months ago approved a civil aviation budget for 1965 of 486.7 million francs or \$97.3 million. Of this amount, about \$64 million will be assigned to the Concorde.

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 1960; March 13, 1961
 Periodical Files

Revenue and Income Accounts

AIR FRANCE

(Year Ended December 31)

Summarized Balance Sheet Position

AIR FRANCE

(As of December 31, 1962)

	(NFF 000)	(U.S. \$ (000))
Current Assets	826,763	\$ 168,727
Gross Fixed Assets	2,007,485	385,380
Less Reserve Depre.	915,392	186,815
Net Fixed Assets	1,092,093	198,565
Other Assets	103,016	21,024
Total Assets	2,021,872	412,627
Current Liabilities	409,263	83,523
Long-term Debt	920,258	187,808
Capital Stock:		
Preferred	--	--
Common	500,000	102,041
Surplus Reserves	144,977	29,587
Total Capital & Liab	2,021,872	\$ 412,627
Working Capital	417,500	\$ 85,204

	FF (000)	U. S. \$ (000)
1958 OFF	84,437,022	\$ 175,467
1959 OFF	104,965,088	214,129
1960 OFF	1,223,066	249,444
1961 OFF	1,474,228	300,863
1962 OFF	1,580,383	322,528
Net Income		
1958 OFF	743,539	\$ 1,509
1959 OFF	700,558	1,429
1960 OFF	1,251	255
1961 OFF	1,215	248
1962 OFF	13,375	2,730
Depreciation		
1958 OFF	6,502,614	\$ 13,200
1959 OFF	12,136,591	24,759
1960 OFF	159,014	32,431
1961 OFF	168,990	34,438
1962 OFF	170,616	34,820

ALITALIA

The Company

Although Alitalia is organized in the form of an ordinary private corporation, it is owned and financed in very large measure by the Italian government.

Capital Stock. As of December 31, 1960, the authorized and paid up capital of Alitalia was Lire 20 billion (\$32.2 million), but in 1961 the authorized stock capital was raised to Lire 25 billion (\$40.3 million), of which Lire 23 billion (\$37 million) was paid up by June 1961. By December 31, 1962, the full Lire 25 billion had been paid up and in 1963 Lire 5 billion (\$8.1 million) of preferred stock was issued in addition pro rata to shareholders.

As of February 1959, when the authorized capital stock stood at Lire 20 billion, two agencies of the Italian government held a total of 88.76%. This proportion appears to have been preserved after the capital stock was raised to Lire 25 billion, and may have been further increased as a result of the relinquishment by British European Airways in 1961 of its 6.75% participation in the capital stock of Alitalia, since this holding was taken over by the Istituto per la Ricostruzione Industriale (IRI), an Italian government agency. In all probability, the Italian government now holds at least 90% of the paid-up stock of Alitalia. Since the book value of the capital stock plus reserves stood at Lire 23.1 billion (\$37.3 million) at the end of 1960, the investment of the Italian State as stockholder in Alitalia appears to have had a book value of about

Lire 21 billion (\$33.8 million) as of the end of 1960 and is now probably close to Lire 25 billion (\$40.3 million).

Alitalia has paid no dividends on its stock, although Linee Aeree Italiane (LAI), which was merged with Alitalia in 1957, and in which the Italian government also held a large part of the stock, had been paying an annual dividend at the rate of 5% for a number of years.

The bulk of the government-owned stock of Alitalia is now held by the Istituto per la Ricostruzione Industriale (IRI), an autonomous agency set up by the government, managed by a Board consisting of government officials and appointees, and financed by government funds and by issues of its own bonds. IRI has been generally operated at a loss, and has returned no profits to the Italian government through the Ministry of State Participations.

Long-term debt. The indebtedness of Alitalia to "financial institutes", as distinguished from banks, rose from Lire 11.5 billion (\$18.7 million) at the end of 1958 to Lire 49.4 billion (\$79.6 million) at the end of 1963. These "financial institutes" are apparently IRI (see above), and also another government agency, Istituto Mobiliare Italiano (IMI), through which Alitalia has received loans from the Export-Import Bank of Washington. The total figure thus apparently includes the Export-Import Bank credits. Information as to the terms of this long-term indebtedness, including interest, is not available (except for the Export-Import Bank loans).

The Export-Import Bank credits, granted

through IMI, in behalf of Alitalia, have been as follows:

June 12, 1952

For unspecified aircraft and spare parts	\$4,720,500
Advances by participants	<u>1,180,122</u>
Net Credit	<u>\$3,540,375</u>

This loan was repaid on schedule.

October 16, 1958

For four DC8's plus spare parts	\$23,917,701
Advanced by participants	<u>2,617,701</u>
	<u>\$18,300,000</u>

This loan is being repaid in thirteen semi-annual installments, starting September 1, 1960. The interest rate is 5-1/2%.

No information is available as to any government guarantees of long-term indebtedness of Alitalia to private creditors, which consists very largely of 5-1/2% bonds issued in 1960 in the amount of Lire 10 billion, which mature in 1980.

Direct Subsidies

Neither Alitalia, nor LAI which was merged with Alitalia in 1957, appears to have received any direct governmental subsidies labelled as such.

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Periodical files

Summarized Balance Sheet Position

ALITALIA
(As of December 31, 1963)

	<u>Lire (000)</u>	<u>U.S. \$ (000)</u>
Current Assets	22,385,819	\$ 36,041
Gross Fixed Assets	135,165,309	217,616
Less Res. for Depre.	<u>35,263,982</u>	<u>56,772</u>
Net Fixed Assets	99,901,387	<u>150,841</u>
Other Assets	<u>2,343,223</u>	<u>3,773</u>
Total Assets	<u>124,630,429</u>	<u>\$200,655</u>

Current Liabilities	25,487,094	41,034
Long-term Debt	59,068,962	95,101
Capital Stock:		
Preferred	5,000,000	8,050
Common	25,000,000	40,250
Surplus Reserves	1,122,493	1,807
Other Reserves & Liab.	<u>8,951,880</u>	<u>14,413</u>
Total Capital & Lia.	<u>124,630,429</u>	<u>\$200,655</u>
Working Capital	<u>(3,101,276)</u>	<u>\$(4,993)</u>

Revenues And Income Accounts

(Years Ended December 31)

ALITALIA

	<u>(000) Italian Lire</u>	<u>(000) U.S. \$</u>
Revenues		
1958	26,138,272	\$ 41,821
1959	55,033,391	56,053
1960	44,481,588	71,171
1961	60,080,498	96,810
1962	82,233,356	132,506
1963	95,517,758	152,828

	<u>Net Income</u>	
1958	(1,894,093)	\$ (3,031)
1959	152,398	244
1960	110,597	177
1961	1,650,998	2,660
1962	1,055,607	1,701
1963	1,113,252	1,781
Depreciation		
1958	3,567,696	\$ 5,708
1959	3,398,052	5,437
1960	4,602,364	7,364
1961	6,770,303	10,909
1962	9,377,261	15,110
1963	10,360,296	16,576

AIR-INDIA INTERNATIONAL

The Company

Air-India International, Limited, was established as a private stock corporation with the approval and participation of the government of India in November, 1947. The corporation had an initial authorized capital of Rupees (Rs.) 7.0 crores (\$14.7 million) and an initial paid-in capital of Rs. 2.0 crores (\$4.2 million). Of the latter, the government of India acquired 49 per cent, with an option to purchase an additional two per cent at any time.

Under the plan of incorporation, the government of India agreed, if necessary, to provide a subsidy to the corporation for the period of five years in order to protect it from possible losses. The subsidy was repayable from subsequent earnings at the rate of 50 per cent of annual profits until fully recovered.

Air-India International, Limited, was officially registered on March 8, 1948, and operations were inaugurated on June 8 of the same year.

In 1952, the government of India decided to nationalize all the scheduled air carriers of the country, including international services. Two subsidiary corporations were formed, one to operate long-haul international routes, and the other, domestic flights and short-range international services to adjacent countries.

Accordingly, the Air Corporations Act, 1953, was passed by Parliament and received the assent of the President on May 8, 1953. Air-India Inter-

national, Limited, was dissolved on August 1, 1953, and the assets and business of the company were acquired by Air-India International Corporation.

Under terms of the Act, shareholders of the company received Rs. 2.82 crores (\$5.9 million) for their investment. Of this amount, 10 per cent or Rs. 28.00 lakhs (\$590,000) was received in cash. The remainder (Rs. 2.54 crores or \$5,310,000) was financed in 3-1/2% Air-India International Corporation bonds (1953-1958) which were guaranteed by the government of India and became the initial loan capital of the new corporation.

Capital Investment, Government Loans and Government Guarantees

1. Capital Investment

Since nationalization on August 1, 1953, total equity and loan capital of Air-India International has been provided by the government of India. As of March 31, 1963, the equity capital was increased to Rs. 134,021,737 (\$28.2 million). Loan capital of an equal amount was also increased and received by Air-India from the government. This loan is at 4-1/2%, but interest is waived up to October 1, 1966.

The equity and loan capital accounts were steadily augmented by the government to permit Air-India to proceed with its various equipment acquisition and other construction programs. Such capital contributions (in the form of 50% equity at 50% in debt since fiscal year 1959) were also supplemented by direct grants from the government to be utilized toward equipment purchases. Lockheed

749 and 1049 Constellations were financed, in a large measure, through such government assistance in 1954 and 1955.

Moreover, the government provided the airline with an advance of Rs. 25.5 million (\$535,000) during fiscal 1957 for initial outlays on the purchase of three Boeing 707 jets. Of the total, Rs. 18.6 million (\$396,060) was repaid in fiscal 1958 and the balance, Rs. 6.64 million (\$139,440) was converted into capital during the period. Such government aid facilitated the World Bank loan which financed the bulk of the cost of this equipment.

2. Government Loans

The government of India has provided only one special loan to Air-India International since operations were nationalized. This loan, Rs. 30 million (\$630,000), with an interest rate of 4-1/2% and repayable in 15 annual installments, was obtained during 1956 for the construction of a staff housing colony at Santa Cruz. The loan (plus interest) was repaid in full in the fiscal year ended March 31, 1958. Since that time, capital construction projects (such as the new building for the technical headquarters and the engineering school facility at Santa Cruz) have been financed from equity and loan capital increases granted to the corporation by the government of India.

3. Government Guaranteed Loans

During fiscal 1956, Air-India International, with the sanction of the government of India, agreed to purchase 3 Boeing 707-420 jets for delivery in 1960. However, in order to conserve

foreign exchange, the government directed the corporation to negotiate dollar loans for this commitment. With the help of the Indian government, Air-India International placed loans totaling Rs. 80 million covering the total cost of the project. Of this amount, Rs. 26.7 million (\$5.6 million) bearing interest at 5-1/2% per annum, was secured from the International Bank for Reconstruction and Development (World Bank). The remaining Rs. 53.3 million (\$11.2 million) was borrowed from five U.S. commercial banks (The First National City Bank of New York, Bank of America National Trust and Savings Association, The Chase Manhattan Bank, Irving Trust Company and the First National Bank of Boston). All of the Rs. 80 million was drawn down by the end of fiscal 1960.

Repayment of the loans was scheduled in semi-annual installments over five years, with the commercial banks being paid first. Rs. 15, 993,600 (\$3,360,000) was repaid annually starting in fiscal 1961.

The original decision to finance in the London market the Rolls Royce (\$5.3 million) by-pass jet engines, which cost Rs. 25.3 million, was reversed due to the high interest costs prevailing in the United Kingdom. Instead, the government of India provided the corporation with the required foreign exchange through capital contributions.

In fiscal 1960, Air-India, with the consent of the government, placed an order for one additional Boeing 707 which, with ancillary spare parts and equipment, totaled Rs. 4.0 crores (\$8.4 million). The previously mentioned U. S. commercial banks provided a supplementary loan of Rs. 5.7 million (\$1,204,000) at 6% per annum to cover 20% of the

required dollar content of the loan. This amount was drawn down during the fiscal year ended March 31, 1961.

The balance of the dollar loan was financed by the Indian government from a Rs. 1.95 crores (\$4.1 million) credit obtained from the Export-Import Bank. The funds to meet the costs of the Rolls Royce engines again were provided directly by the government of India.

Further, in December, 1960, orders were placed with Boeing for two additional 707 jets at a cost of Rs. 8.0 crores (\$16.8 million). Air-India International negotiated a loan of Rs. 114.24 lakhs (\$2.4 million) representing 20% of the estimated dollar cost of this project. This loan is scheduled to be paid in ten equal annual installments. The first payment of Rs. 1.1 million (\$240,000) was made in fiscal 1963. Also, the government secured a further loan from the Export-Import Bank of approximately Rs. 3.95 crores (\$8.1 million) towards the purchase of these aircraft.

As of March 31, 1963, loans guaranteed by the government and outstanding were as follows:

	Rs.	U.S. Dollars (in millions)
World Bank Loan	26.8	\$ 5.626
U.S. Commercial Bank Loans	5.3	1.120
U.S. Commercial Bank Supplementary Loans	5.7	1.204
U.S. Commercial Bank 2nd Supplementary Loans	10.3	2.160
	48.1	\$10.110

It is understood that the World Bank Loan was repaid in full during 1964.

Direct Subsidies

Air-India International has operated at a profit in every year since the nationalized operations commenced in August, 1953. However, during the ten year period, the government of India has granted the company a moratorium in regard to interest payments on capital. (The moratorium originally provided for the first five years (1953-1958) was extended by the government until October, 1966, in the fiscal year ended March 31, 1959.)

Aside from the moratorium on debt, no dividends have been declared on the equity provided by the government of India.

Tax Exemptions

Air-India International is subject to the general tax laws of India. Although provisions for taxes were made in the fiscal year through 1963, no taxes other than those allocated to foreign governments at overseas stations have been paid excepting in fiscal 1962 and 1963. Thus, the corporation has built up a large reserve for deferred taxes over the years. No explanation can be ascertained as to why no taxes were deferred in the fiscal years through March 31, 1961. The deferred taxation reserve amounted to Rs. 11.3 million (\$2.4 million) at March 31, 1963.

Provisions for Equipment

The government of India purchased Air-India

International's fleet of 9 Lockheed 1049 Super Constellations, which were replaced by Boeing 707 jets on the corporation's long-haul routes. Four or five of the Constellations were turned over to the India Air Force in 1961, while the remaining aircraft were retained by Air-India for services to Moscow, Kuwait and Sidney until the two additional 707's order were delivered in 1963. Terms of the purchase of the Constellation aircraft have not been announced.

Sources Used:

Annual Reports - Air-India International, 1954-1963
 Selig Altschul, Significance of Nationalization of the Indian Airlines, Journal of Commerce, 1953
Air Corporation Act, 1953, as modified on June 1, 1954
 ICAO, Digest of Statistics, 1954-1962
 U.S. Department of Commerce, Investment in India, January, 1954
 U.S. Department of Commerce, World Survey of Civil Aviation-Southwest Asia, 1961
 Periodical files

Summarized Balance Sheet Position

AIR-INDIA INTERNATIONAL (As of March 31, 1963)

	Indian Rupees (000)	U. S. \$ (000)
Current Assets	171,277	\$35,809
Gross Fixed Assets	312,921	65,423
Less Reserve for Depre.	62,920	13,155
Other Assets	1,436	300
Total Assets	422,713	\$88,377
Current Liabilities	58,942	\$12,323
Long-term Debt	48,123	10,611
Capital Stock:		
Preferred	none	none
Common	268,163	56,065
Surplus Reserves	195	41
Other Reserves & Liabilities	47,290	9,887
Total Capital & Liab.	422,713	\$88,377
Working Capital	112,335	\$23,486

Revenues and Income Accounts

AIR-INDIA INTERNATIONAL

(Years Ended March 31st)

(000) Indian Rupees (000) U.S.\$

Revenues

1959	115,577	\$ 24,271
1960	125,848	26,390
1961	191,741	40,266
1962	215,698	45,334
1963	245,269	51,278

Net Income

1959	1,828	\$ 384
1960	2,698	566
1961	6,797	1,427
1962	4,593	1,041
1963	13,478	2,818

Depreciation

1959	12,071	\$ 2,535
1960	15,474	3,245
1961	27,889	5,857
1962	31,588	6,639
1963	28,553	5,970

BRITISH OVERSEAS AIRWAYS CORP.

The Corporation

British Overseas Airways Corporation (BOAC) was organized on April 1, 1940, pursuant to the British Overseas Airways Act, 1939, and assumed the assets and operations of predominantly privately owned Imperial Airways, Limited, and privately owned British Airways, Limited.

On August 1, 1946, this corporation was established under the Civilian Act, 1946. British European Airways (BEA) was organized on the basis of the British European Airways division of BOAC and, as of February 1, 1947, took over domestic services in the United Kingdom which were previously operated by small private companies grouped during World War II into the Associated Airways Joint Committee. British South American Airways Corporation (BSAA) succeeded to the operations of British South American Airways, Limited, a private company formed by five British shipping companies. (BSAA was merged with BOAC as of August 1, 1949.)

At present, the two remaining corporations operate under provisions of the Air Corporations Act, 1949, as amended, which consolidated and superseded all prior legislation.

Direct Subsidies

a. Direct subsidies in the form of non-recoverable exchequer grants on a deficit-covering basis constituted an important source of funds for BOAC and BEA in the years of operation immediately after World War II. For the 1947-1952 fiscal periods, BOAC received

a total of £35 million (£132.2 million) from the exchequer, but nothing directly thereafter.

b. All stock in BOAC is held by the British government. Thus, another form of subsidy is hidden in the amounts represented by the profits realized from redemption of stock. Amounts for stock redeemed are, with approval of the Minister of Aviation and H. M. Treasury, considered to be covered by fleet obsolescence charges, while profits realized from stock redemption are credited to the company's capital reserve. Together, these two forms of indirect subsidy averaged £742,000 (£2,075,000) annually from fiscal 1951-1955; £1 million (£3,080,000) annually from fiscal 1956-1960; and £1,525,000 (£4,270,000) annually from fiscal 1961-1963.

c. At March 31, 1963, BOAC had an accumulated capital deficit of £80.2 million (\$224.3 million) on which interest of 3.1 million (\$8.7 million) was payable. By March 31, 1964, this deficit had grown to £90.5 million (\$253.4 million) with interest due of £3.6 million (\$10.1 million). BOAC has expressed the opinion that government may liquidate the accumulated deficit as part of the reorganization of the company's capital and financial structure promised by the Ministry of Aviation. Such a move would constitute a further annual subsidy in the amount of the interest charges eliminated, or over £3-1/2 million (\$10 million) currently. In addition, re-mission of the accumulated deficit would represent subsidization, retroactively, of past operating deficits.

Capital Investment, Government Loans and Government Guarantees

1. Capital Investment

The capital of BOAC has been provided by the

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Government through issuance of Airways stock with fixed maturity dates and interest. All stock issued is held by the National Debt Commissioners, a government agency. The statutory limit on borrowing capital through issuance of stock and temporary loans is £260 million (\$728 million). This total was raised from £180 million (\$504 million) under the Air Corporations Act of 1962.

Of the £260 million limitation, total capital of £172.1 million (\$483 million) has been taken up. Capital stock represents £54,043,000 (\$151.3 million) of this total, down from a peak of £60.1 million (\$168 million) in fiscal 1957.

2. Government Loans

During fiscal 1956-1957, the British government decided that advances to nationalized industries for capital investment should be provided from the exchequer. This coincided with initial delivery of large fleets of turbo-prop and pure jet aircraft to BOAC. At March 31, 1957, the active fleet consisted of 7 turbo-prop aircraft and 49 propeller aircraft. By the period ended March 31, 1963, BOAC had 38 jet and 15 turbo-prop aircraft in its active fleet and only 4 propeller aircraft remaining. Most of this new fleet was financed by the Minister of Aviation which expended from £9.9 million (\$27.7 million) in 1957 to £114.5 million (\$321 million) at March 31, 1963.

3. Government Guaranteed Loans

BOAC has, from time to time, borrowed short-term capital with the guarantee of the Treasury of the United Kingdom. Such guarantee has enabled the company to borrow in the U.S. at lower rates than could have been possible in the open market. In addition,

short-term bank overdrafts have also been guaranteed by H.M. Treasury. Total borrowings from these sources have contracted from £9,429,000 (\$26.4 million) in 1958 to £3.6 million (\$9.95 million) at March 31, 1963. U. S. loans which constituted the entire amount in 1958, were paid off completely in 1962, and overdrafts accounted for all of the borrowings outstanding at the end of fiscal 1962 and 1963.

Training of Personnel

In the past years when BOAC and BEA experienced a shortage of trained pilots, the Royal Air Force has released a considerable number of flight personnel to the civil airlines. However, due to expansion and normal attrition, it has become necessary to supplement the number of pilots which will become available in future years. Thus, BOAC and BEA, in conjunction with the Ministry of Transport and Civil Aviation and the Ministry of Education, have set up the College of Air Training, which graduated its first class late in 1961. It is presumed that there is an element of government subsidy in the training of pilots at this institution.

Tax Exemptions

While BOAC is subject to the general tax regulations of the government, the carrier has not paid any taxes in the period under review due to the capital investment allowance granted by the United Kingdom. These allowances have exceeded the relative amounts provided for depreciation and amortization and provisional computations show that no liability for payments of United Kingdom taxation will arise from profits in those years where present in respect to accounting periods through March 31, 1964. Amounts deferred for future taxes in certain earlier

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years (1953-1954) have been released to the carriers' profit and loss accounts.

In addition, BOAC and BEA are exempt from the following taxes:

1. Most of the tax on fuel when such fuel is used in service outside the United Kingdom
2. Certain stamp taxes.

Provision of Equipment

It is known that the Ministry of Supply of the British government contributed toward the cost of developing the Viscount 701 aircraft. However, the agency charged a research and development royalty averaging £ 8,200 (\$22,960) per aircraft. Since the Viscount 701 was successfully marketed on a world-wide basis, it is believed that the Ministry of Supply made a profit on its investment in this aircraft.

The British government expended approximately £ 4 million (\$11.2 million) to aid development of the Comet jet series by de Havilland Aircraft Company. This total was subsequently increased substantially due to the large sums provided by the government for investigation and correction of the fuselage weakness in the early Comet aircraft.

Sources used:

Reports and Accounts of BOAC, 1949-1963
Air Corporations Act, 1949, as amended on Dec. 18, 1953, Dec. 20, 1956, and March 22, 1960
House of Commons, report of the select committee on nationalized industries - The Air Corporations, May 14, 1959
ICAO, Digests of Statistics (Financial Data) 1953-'62
Periodical files

Summarized Balance Sheet Data

Revenue and Income Accounts

BRITISH OVERSEAS AIRWAYS CORP.

BRITISH OVERSEAS AIRWAYS CORP.

(As of March 31, 1963)

(Years Ended March 31)

	Pounds Sterling (000)	U. S. \$ (000)
Current Assets	29,243	\$ 81,868
Gross Fixed Assets	192,420	538,689
Less Res. for Depr.	88,892	248,855
Net Fixed Assets	103,528	289,834
Other Assets	12,157	34,032
Total Assets	144,928	\$405,734
Current Liabilities	24,374	\$ 68,236
Long-term Debt	none	none
Capital Stock:		
Common	168,586	471,965
Surplus Reserves	(77,100)	(215,845)
Other Res. & Liab.	29,068	81,378
Total Cap. & Liab.	144,928	\$405,734
Working Capital	4,869	\$ 13,632

	Pounds (000)	U. S. \$ (000)
Revenues		
1959	58,447	\$ 163,652
1960	71,235	199,928
1961	89,305	250,367
1962	93,730	263,658
1963	93,327	261,274
1964	103,755	290,514
Net Income		
1959	(4,777)	\$ (13,376)
1960	(821)	(2,304)
1961	(2,546)	(7,138)
1962	(15,835)	(44,541)
1963	(12,860)	(36,008)
1964	5,729	16,041
Depreciation		
1959	5,356	\$ 14,997
1960	8,175	22,944
1961	10,651	29,860
1962	12,720	35,781
1963	10,644	29,801
1964	11,200	31,360

DEUTSCHE LUFTHANSA

The Company

Deutsche Lufthansa Aktiengesellschaft was founded on January 6, 1953, as a stock corporation in which the government of the German Federal Republic was to hold most of the capital.

Lufthansa is the national airline of West Germany and subject to detailed control of the West German Government. However, not having any colonies or other overseas territories its government requires it to serve, Lufthansa has been allowed to select routes to be operated on such economic basis as the company may determine.

Capital Investment

Capital Stock. The capital stock of Lufthansa, initially DM25 million, has been increased to DM250 million (\$62.5 million) as of 1963 year-end.

The bulk of the stock has been continuously held, though in somewhat varying proportions, by the Federal Government, certain government agencies, and the State (Land) of Nordrhein-Westfalen. At last reports, the capital stock was held as follows:

	<u>1963 Year-End</u>
Federal Republic	81.3%
Federal Post Office	2.8
Federal Railways	1.7
Nordrhein-Westfalen	5.0
All Other	9.0

The investment of the Federal and State govern-

ments and agencies in the capital stock and reserves of Lufthansa thus had a book value of approximately DM 227 million (\$56.8 million) at December 31, 1963.

No dividends have been paid on the capital stock.

Long Term Debt. The Federal Republic and its Post Office Department have made long-term loans to the company. The Federal Government and the State of Nordrhein-Westfalen have also extended guarantees to Lufthansa's borrowings from other sources.

From modest levels, government loans and guarantees have shown an almost steady rising trend. The Federal Government first made a loan of DM32.4 million (\$7.8 million) in 1957. At the 1963 year-end, this loan reached DM79.2 million (\$19.9 million). The Federal Post Office from an early loan in 1955 of DM 8 million (\$1.9 million) increased its long-term debt in the airline to DM 135.1 million (\$33.9 million) by the 1963 year-end.

Since 1959, part of this subsidy has been allocated to preparatory and initial operating costs of new routes. Allocations for this purpose have been as follows:

	<u>DM</u> <u>(millions)</u>	<u>U.S. Dollars</u> <u>(millions)</u>
1959	28.8	\$ 6.9
1960	18.7	4.5
1961	77.5	19.4
1962	35.1	8.8
1963	1.8*	.5*

*Represents loss on Flight Training School at Bremen less operating profits.

In addition, a subsidy allocation to cover "special depreciation" has been as follows:

	DM (millions)	U.S. Dollars (millions)
1959	10.0	\$ 2.4
1960	20.3	4.9
1961	29.4	7.4
1962	9.1	2.3

Hence for the eleven year period to end December 31, 1963, Lufthansa is known to have received direct subsidies of at least DM 456.5 million (\$110 million).

Similarly, the guarantees of the government increased from DM 15.4 million (\$3.7 million) in 1956 to DM 214.3 million (\$53.8 million) at December 31, 1963. The guarantee of the State of Nordrhein-Westfalen in the amount of DM 8 million (\$1.9 million) which was present in 1956 was "removed" by 1959.

For the period 1961-1965, the planned investment in Lufthansa was placed at DM 624 million (\$149.8 million). Of this amount, at least DM 546.3 million (\$131 million) is to be contributed by the government, but information as to the form of the contribution is not now available.

Information as to the terms of Lufthansa's borrowings from the government is also not currently available.

Direct Subsidy

Initially, the Federal Government promised Lufthansa a subsidy for the first four years of

development and operations only, but the subsidy payments have continued to be made and to grow beyond that period, as the following table shows:

Year	Subsidy*	
	DM	U.S. Dollars
1953	1,379,746	\$ 331,139
1954	5,468,694	1,312,487
1955	20,540,881	4,929,794
1956	19,302,751	4,632,660
1957	24,684,893	5,924,374
1958	32,132,544	7,711,811
1959	38,779,162	9,306,999
1960	39,000,000	9,360,000
1961	106,900,000	26,751,725
1962	46,500,000	11,629,650**
1963	1,800,000	452,160**

* Including, before 1958, an unspecified amount contributed by the State of Nordrhein-Westfalen.

** Including training school at Bremen.

Special Favors

The State of Hamburg has built one of the largest maintenance facilities in Europe at Hamburg-Fuhlsbuttel, comprising extensive space for the overhaul of aircraft and the conduct of engineering activities. This facility, having an original cost of more than DM 10 million (\$2,400,000) is leased to Lufthansa on a favorable long-term basis. Substantial additions are known to have been made in subsequent years. On its balance sheet, Lufthansa shows no investment in fixed property devoted to overhaul or maintenance operations. An unofficial report indicates that the maintenance bases at Hamburg and

Frankfurt contributed by Government instrumentalities were valued at about DM 164.6 million (\$39.5 million) at the 1960 year-end. Improvements on buildings on leased land under the category of "Operating Facilities", at December 31, 1960, were valued at DM 588,474 (\$141,234). To the degree that the State at Hamburg has made such fixed property available on a preferential basis, an indirect subsidy is extended to Lufthansa.

Sources Used:

Deutsche Lufthansa A.G. Annual Reports, 1953-1963
 Deutsche Lufthansa Aktieng Gesellschaft, Foreign Air Carrier Permit, 20 C.A.B. 921 (1955), and 23 C.A.B. 396 (1956)
 ICAO, Digest of Statistics, Financial Data
 Periodical files

Summarized Balance Sheet Position

DEUTSCHE LUFTHANSA
 (As of December 31, 1963)

	DM (000)	U.S. \$ (000)
Current Assets	103,547	\$ 27,267
Gross Fixed Assets	N.A.	N.A.
Less Res. for Depr.	N.A.	N.A.
Net Fixed Assets	403,791	101,432
Other Assets	89,771	22,550
Total Assets	602,110	\$ 151,249
Current Liabilities	90,697	\$ 22,783
Long-term Debt	214,456	53,871
Capital Stock:		
Preferred	---	---
Common	250,000	62,800
Surplus Reserves	---	---
Other Res. & Liab.	46,956	11,795
Total Capital & Liab.	602,110	\$ 151,249
Working Capital	17,850	\$ 4,484

Revenues and Income Accounts

DEUTSCHE LUFTHANSA
(Years Ended December 31)

DM (000) U.S. \$ (000)

Revenues

1958	175,281	\$ 41,734
1959	230,180	55,197
1960	344,770	82,676
1961	401,350	100,438
1962	478,895	119,783
1963	587,767	146,942

Operating Income

1958	(30,654)	\$ (7,357)
1959	(40,156)	(9,638)
1960	(43,752)	(10,492)
1961	(130,498)	(32,657)
1962	(57,672)	(14,426)
1963	(N.A.)	(N.A.)

Depreciation

1958	23,977	\$ 5,709
1959	43,541	10,441
1960	54,798	15,539
1961	89,599	22,422
1962	62,991	15,756
1963	64,248	16,062

JAPAN AIR LINES

The Company

Japan Air Lines Company, Limited was organized as a private enterprise under license from the Japanese government on August 1, 1951. This followed relaxation of the ban on civil air transportation imposed by the occupying powers and which had prevailed since the end of World War II. However, initial operations were confined to domestic routes.

Japan was freed from all civil air transport regulations when the Treaty of Peace with the United States became effective on April 28, 1952. On August 1, 1953, a Civil Air Transport Agreement between Japan and the United States was concluded which provided for a mutual exchange of rights to operate between the two countries.

The new Japan Air Lines Company, Limited was established on October 1, 1953 under the Japan Air Lines Limited Law enacted by the Japanese Diet in June of that year. The company then took over all of the equipment, facilities and personnel of the former corporation.

The initial capitalization of the new Japan Air Lines was set at Japanese yen (¥)2 billion (\$5,566,000), with 50 percent provided by the government and 50 percent by private stockholders.

Capital Stock

The capital stock of Japan Air Lines has been increased in every year since the inception of operations in 1961. When the new corporation was formed in 1953, the government of Japan subscribed to 50%

of the stock, or 2 million shares. Although the absolute amount of stock in the hands of private shareholders, as well as the government, has expanded steadily in the ensuing years, the amount of the government's holdings has fluctuated through the years and amounted to 55.75% of the total of 29,778,000 shares valued at 14,009 million yen (\$41.3 million) outstanding as of September 30, 1964.

Under Article 10 of the Japan Air Lines Limited Law of 1953, payment of dividends on the government's share of stock may be exempted until such time as the company can disburse 8% per annum dividends on shares held by non-government interests. In each of the four fiscal years ending March 31, 1961 JAL declared a 5% dividend to private shareholders, most of which has been paid in stock. (Of the 5% disbursed in fiscal 1959 4-1/2% was paid in stock.) No dividends were paid subsequently.

Long-Term Debt

Due to the rapid expansion of scheduled services since 1957 and the company's attendant re-equipment, first with DC-7C's and later with DC-8 and Convair 880 jet aircraft, long-term debt of Japan Air Lines has skyrocketed from \$11.9 million at March 31, 1957 to \$74.7 million at March 31, 1963. Export-Import Bank loans and public issues of Japan Air Lines bonds have assumed increasing significance in the debts of the airline.

In 1956, JAL arranged two long-term loans with the Export-Import Bank for the purchase of four DC-7C and four DC-8 aircraft. Total cost of these aircraft, together with spare parts and related ground equipment, amounted to ¥ 15,875,951,000 (\$44,099,865), of which ¥ 8,958,960,000 (\$24,886,000) was to be provided directly by the Export-Import

Bank at 5-1/2% interest.

Again in 1961, JAL obtained two long-term seven year loans from the Export-Import Bank to help acquire jet aircraft. One credit in the amount of \$12.2 million was utilized to purchase three Convair 880's and spares at a total cost of \$17.9 million. The other credit in the amount of \$4.3 million was applied toward the purchase of another DC-8 and spares amounting to \$6.3 million.

Two years later, in December 1963, JAL further resorted to Export-Import Bank assistance. This time, the Export-Import Bank guaranteed a \$10.8 million credit of JAL so that the airline could purchase three Convair 880's and spares aggregating \$13.5 million. At the same time, another credit of \$10.4 million was also guaranteed by the Export-Import Bank so that the airline could proceed with the purchase of two DC-8's having an aggregate value of \$13.1 million.

More recently, in September 1964, the Export-Import Bank again guaranteed two separate credits to facilitate purchase of U.S. jet aircraft. One credit, in the amount of \$25.5 million was to be applied toward the purchase of six 727's and spares valued at more than \$25.5 million. Another credit in the amount of \$1.9 million was utilized to purchase four more DC-8's and spares costing some \$26 million.

The Export-Import loans and credit carries interest rates from 5 1/2 to 6% and were to amortize over a seven-year period from date of issuance.

Japan Air Lines loans from the Export-Import Bank are guaranteed by the Japan Development Bank, which is the primary organ through which government funds are invested in Japanese industry.

In addition, JAL has issued varying amounts of corporate bonds in each year since 1957. The bonds sold in 1957 bore an interest rate of 7%; no information on interest rates of the more recent issues is available.

Under provisions of Article 5 and 9 of the Japan Air Lines Limited Law of 1953, the company may issue bonds up to twice the amount of total capital and reserves of the amount of net worth on the company's latest balance sheet, whichever is smaller.

Further, when it is necessary for Japan Air Lines to issue bonds or borrow funds, the company may be granted a government guarantee for its obligations.

In May 1962, JAL sold publicly in Japan a bond issue in the amount of 2,000 million yen (\$5.6 million) to obtain funds for aircraft purchases and other corporate purchases. This issue was guaranteed by the government and specified an interest rate of 7%. This represented the 13th bond flotation in Japan since May, 1956. The total for the previous bond issues was 9,500 million yen (\$26.4 million).

As of March 31, 1963, the total long-term debt of Japan Air Lines amounted to \$74.7 million.

Direct Subsidies

Aside from the heavy infusions of funds through the purchase of capital stock by the government, JAL has also received material direct subsidy support.

As to the fiscal year ended March 31, 1957, direct subsidies received by JAL from the government amounted to over \$7.8 million.

In 1962, JAL requested additional government assistance to facilitate the airline's expansion plans. In addition to direct stock purchases of about \$6 million by the government, an outright subsidy of \$3 million was also requested. The capital stock purchases were made as indicated but the records are unclear as to the grant of this additional subsidy.

Sources Used:

Japan Air Lines - Annual Reports, 1955 - 1963
 Japan Air Lines - Brief Accounts of its Organization and Activities, published by the predecessor company in 1962.
 Japan Air Lines - Japan Air Lines in 1953
 Japan Air Lines - Past, Present, Prospect of Japan Air Lines, 1953.
 Japanese Government Civil Aviation Bureau - Ministry of Transport, Civil Aviation in Japan, 1959.
 CAB Docket #15640, Recommended Decision of Examiner. December 15, 1964.
 Export-Import Bank of Washington Periodical Files

Summarized Balance Sheet Position

JAPAN AIR LINES (As of March 31, 1963)

	Yen (000)	U.S. \$ (000)
Current Assets	9,882,561	\$ 27,474
Gross Fixed Assets	46,360,925	128,883
Less Reserve for Depr.	14,724,177	40,933
Net Fixed Assets	31,636,743	87,950
Other Assets	5,072,389	14,101
Total Assets	46,591,698	\$ 129,525
Current Liabilities	9,488,549	\$ 26,378
Long-term Debt	26,882,730	74,734
Capital Stock:		
Preferred	---	---
Common	12,647,000	35,159
Surplus Reserves	(2,822,634)	(7,847)
Other Res. & Liab.	396,053	1,101
Total Capital & Liab.	46,591,698	\$ 129,525
Working Capital	394,012	\$ 1,096

Revenues And Income Accounts

(Years Ended March 31)

JAPAN AIR LINES

Yen (000) U.S. \$ (000)

Revenues

1959	11,155,187	\$ 30,989
1960	13,436,964	37,140
1961	17,622,319	47,580
1962	24,449,817	67,784
1963	28,387,377	78,917

Net Income

1959	448,847	\$ 1,247
1960	212,210	587
1961	371,835	1,004
1962	115,790	321
1963	(2,896,041)	(8,051)

Depreciation

1959	1,550,201	\$ 4,306
1960	1,854,422	5,126
1961	1,890,557	5,104
1962	3,317,717	9,198
1963	4,311,530	11,986

KLM - ROYAL DUTCH AIRLINES

The Company

KLM - Royal Dutch Airlines - officially known as Koninklijke Luchtvaart Maatschappij, N. V. - was organized on October 7, 1919. The company's principal office is at The Hague, The Netherlands and its main operating and maintenance base is at Schiphol Airport, near Amsterdam.

Despite predominant Government ownership of stock, KLM at all times since its organization has been managed and operated as a private business enterprise. From time to time during the period prior to 1951, the government made substantial capital contributions and loans (later converted into stock) to the company. Government ownership in the company's outstanding capital stock, directly and indirectly, aggregated 98.4% of the total as of December 31, 1956. Government ownership has since been reduced to about 70% of the total outstanding capital stock. This took place primarily as a result of the public sale of 400,630 common shares in May 1957 in the United States and Holland. Further, in 1957, KLM repurchased 50,000 of its common shares from N.V. Nederlandsche Spoorwegen, the government-owned railway corporation. In 1959, 25,000 of these shares were re-sold to a U.S. institutional investor, leaving KLM with 25,000 shares of its re-acquired stock.

The issue of \$18.5 million in 4 3/4% convertible subordinated debentures, sold in March 1959, could create 544,118 shares of additional common stock if fully converted at the \$34 conversion price. In that event, assuming no other changes in the number of shares held by the Government, the latter would continue to hold a majority (51.1%) of the common shares of KLM then to be outstanding.

Conversion of the debentures into common stock is unlikely with the market price of the latter at prevailing level.

Capital Investment

Capital Stock. As a result of various adjustments resulting from infusion of new funds in prior years at the 1955 year-end there were four different classes of stock. In August 1956 the company's Articles of Association, among other things, simplified the classes of capital stock authorized and outstanding.

As re-constituted, KLM's capital stock structure took the following form:

Classes of Shares	Par Value Per Share (Guilders)	Number of Shares	
		Authorized	Outstanding
Priority	100	500	350
Common	100	1,999,500	1,229,190*
Total		<u>2,000,000</u>	<u>1,229,540</u>

*Includes 150,630 shares of Treasury stock.

Remaining unchanged was the total authorized capital of 200 million guilders (\$52,631,500) with 122,954,000 guilders (\$32,356,300) outstanding.

The Priority shares can only be held by individuals or groups qualifying as citizens of the Netherlands.

As a concomitant of streamlining its corporate and capital structures, KLM sought to broaden public

ownership in the company.

With this objective, KIM purchased 15 million guilders of its ordinary stock from the government at par in June, 1956. The capital structure simplification resulted in this holding becoming 150,000 shares of 100 guilders per value per share. Together with previous treasury stock held, the company, on May 1, 1957, distributed to the public through the Amsterdam market its total holdings of 150,630 shares at 110% of par or about \$29.00 per share. Concurrently, a total of 250,000 shares of authorized but unissued stock were sold in the United States market at the same price of \$29.00 per share. As a result, the company received about \$6.4 million (net) in new equity funds plus a reimbursement of about \$4.3 million for the Treasury stock previously held.

In still another transaction, (as a consideration of loaning 10 million guilders to N.V. Nederlandse Spoorwegen, the government-owned railways), KIM acquired an option to repurchase at par (\$26.00 per share) 50,000 common shares (5 million guilders) held by the latter. The loan to Railways bore interest at 3-1/2% and was repaid on August 15, 1958). KIM exercised the option on its shares held by Railways late in 1958. Early in 1959, KIM sold 25,000 of these shares to an U.S. institutional investor.

Giving effect to these transactions, as of December 31, 1960, the Kingdom of the Netherlands, directly and indirectly, owned 1,009,830 shares of 69.4% of the total 1,454,199 shares of outstanding common and 270 shares or 77.1% of the total 350 shares of outstanding Priority stock. The government ownership in KIM's common stock is valued at \$26.3 million when stated at par (\$26 per share) but only at \$20.2 million at present market prices (\$20 per share).

As previously noted, in March 1959, KIM publicly sold an issue of \$18,500,000 of 4-3/4% convertible subordinated debentures due in 1979.

KIM is the only foreign airline to have its securities listed on the New York Stock Exchange, its common stock and convertible debentures being so listed.

Long-Term Debt

During its restoration program following the war, KIM received various loans from the government which were ultimately converted into capital stock. In 1949, too, the company suffered substantial losses (largely due to the consequences arising out of the military actions in the new Republic of Indonesia). As part of a major financial program, the Act of August 21, 1950 (Netherlands Statute Book K-366), provided for the conversion of the then outstanding loan of 50 million guilders (\$13 million) into common stock. This transaction disposed of all government loans to KIM and none have been made since.

To compensate for losses sustained in 1949, the government made an interest-free payment to the company in 1950 of 10 million guilders (\$2.6 million), repayable only out of profits and evidenced by income certificates. These were paid off in 1951 and 1952.

In March 1952, in order to help finance the acquisition of aircraft, KIM obtained a \$7 million loan in March 1952 from the International Bank for Reconstruction and Development (World Bank). The Chase Bank participated in this credit to the extent of \$3.5 million. The entire loan was guaranteed by the Netherlands government. Further, it had a six and one-half year amortization period and carried a 4-1/2% interest rate and was secured by six four-

engine aircraft. On September 15, 1954, this loan from the World Bank, then reduced to \$5.6 million, was re-funded in the U.S. market on far more favorable terms, reflecting the improved credit position of KIM. The refunded credit was shared equally by the Chase Manhattan Bank and The First National City Bank, both of New York City - and did not carry the guarantee of the Netherlands government nor was it secured by any aircraft. The interest rate of 3-1/4% was one of the lowest ever accorded any airline for bank term money. This credit was repayable over a four-year period starting on January 1, 1955 and was retired on schedule.

There were two other loans outstanding to KIM which then also carried the guarantee of The Netherlands Government.

These loans were guaranteed by the Government under the Act of August 21, 1950 (Statute Book No.K366). The principle of this guarantee, however, was not specifically applicable for KIM's benefit but was extended to Dutch industry in general. It was the Government's objective to attract long-term money into capital goods expansion of the country. The philosophy of this guarantee is similar to the extent of the endorsement of the United States government through the old Reconstruction Finance Corporation and the Federal Housing Administration to stimulate expansion in industry and housing construction in the United States.

Originally issued in the amount of 10 million guilders (\$2.6 million) as of December 31, 1950 the first of these loans is scheduled for retirement by December 31, 1980. Three separate pension funds (two of which are for KIM employees) advanced these funds. The interest rate was 3% until December 31, 1960, increasing to 3-1/2% thereafter. This obligation is

being amortized at the annual rate of 400,000 guilders (\$107,000).

The second government-guaranteed loan of that earlier period represented borrowings of 28 million guilders (\$7.4 million) and arose from cumulative placements with an institutional investor; starting with 14 million guilders on October 1, 1953, 7 million guilders on May 1, 1954, and 7 million guilders on November 1, 1954. This long-term loan carries a 4-1/4% interest rate. Sinking fund payments are at the annual rate of 1.4 million guilders starting on October 1, 1964, and are scheduled to retire the entire issue at maturity. The company can accelerate redemptions, however, after October 1, 1963.

In April 1957, KIM entered into an agreement with the Midland Bank, Limited, London, under which the company obtained an open line of credit of 12,211,000 (\$6,190,800) to be applied towards the purchase of nine Vickers Viscounts having an aggregate value of \$11,470,000. This loan was not guaranteed by the Government. This entire credit was utilized and subsequently repaid in full in 1959.

To help finance its projected equipment expansion program, KIM arranged a \$50 million credit in the United States market on May 1, 1956. The three banks participating in this credit were: The First National City Bank of New York, The Chase Manhattan Bank and the Bank of America.

There were no guarantees by The Netherlands government or any mortgages securing this credit. The interest rate on all outstanding balances under this revolving credit was one-quarter of one percent above the New York prime rate up until December 31, 1960. (This was equivalent at the time of granting this credit to an effective rate of 4-3/4%). Upon becoming

a term loan after December 31, 1960, the effective interest rate was scheduled to then become one-half of one percent above the New York prime rate.

In March 1959, concurrent with the public sale of \$18.5 million in subordinated convertible debentures (see below) KIM's revolving bank credit with the same three U. S. banks was increased to \$70 million. The interest rate on this enlarged credit, which was to become a term-loan starting January 1, 1962, was boosted to 5%. The draw-down period was extended by one year, i.e., through December 31, 1961. After that date, repayments were scheduled to retire this term loan from 1962 through 1966. There were no other significant changes to this credit.

During 1959, KIM placed with a Dutch industrial pension fund a 4½ loan in the net amount of 5 million guilders (\$1.3 million) payable from 1968 through 1987. About the same time still another fiduciary fund in Holland loaned KIM 10 million guilders (\$2.6 million) at a 4½ rate payable from 1963 through 1983.

As part of a broader financing plan, KIM in March 1959 sold in the United States and in The Netherlands, \$18,500,000 in 4-3/4% convertible subordinated debentures due in 1979. The sinking fund on these debentures does not start until 1970.

Further, in July 1959, a Dutch banking syndicate sold 50 million guilders (\$13.2 million) 4-3/4% debentures due 1979 in The Netherlands.

In July 1960, the same Dutch banking syndicate placed 50 million guilders (\$13.2 million) of 5% debentures due 1975 in The Netherlands.

The U. S. bank credit, the subordinated convertible debentures, and the four guilder loan and

debenture issues of 1959 and 1960 relied on the general credit of KIM and were without any government guarantees.

Due to the substantial losses incurred in 1961, (\$21.3 million), the financial position of KIM was weakened considerably. Management subsequently sought and obtained, early in 1962, Government guarantees covering credits to be obtained, up to January 1, 1963, by the company up to 375 million guilders (\$104.1 million). Further, provision was also made for the granting of loans by the government to the company not to exceed 50 million guilders (\$13.8 million). These measures of government assistance were enacted by the State under the Act of August 2, 1962 (Statute Book 300).

These provisions facilitated the refunding of the \$70 million bank credit formerly repayable between 1962 and 1966.

On August 15, 1962, KIM issued promissory notes guaranteed by the State in the amount of 125 million guilders (\$34.7 million). The proceeds of these notes, plus dollar funds available, were applied to repay \$35 million of the U.S. bank credit on August 15, 1962. The new promissory notes, with a 4-3/4% coupon mature in 1967 with amortization starting in 1963.

Subsequently, in November 1962, KIM obtained almost 125 million guilders (\$34.7 million) through the sale of a debenture issue, interest and principal, also guaranteed by the State. These funds were applied to repay the remaining balance of \$35 million of the U.S. bank credit. The debenture issue, carrying a 4-1/4% coupon is to be repaid in five equal annual installments starting in November 1968.

During 1963 KIM repaid 25 million guilders

(\$6.9 million), as scheduled on the promissory notes issued on August 15, 1962. Subsequently, however, KIM obtained a new State-guaranteed loan of 25 million guilders to apply towards the purchase of two DC8F aircraft.

Up to the 1963 year-end, KIM had utilized the guarantee only to the extent of 250 million guilders (\$69.4 million), the remaining 125 million guilders (\$34.7 million) remaining untouched. Further, the authorization of a 50 million guilder (\$13.8 million) direct loan from the Government was never implemented by the company. (The cash flow resulting from the company's operations in 1962 and 1963 improved its financial posture considerably).

Of the total long term debt (exclusive of the subordinated convertible debentures) aggregating \$115.8 million at December 31, 1963, \$79.1 million or 68% was guaranteed by the Government.

Subsequently, in 1963, the Government signed an agreement with KIM which contained the following provision:

"In case of bankruptcy of KIM or suspension of payment by KIM, the debts to the State as referred to in par. a shall be subordinated to amounts payable to KIM's other creditors and shall only be paid after the other creditors of KIM have been paid in full."

The substance of this agreement, by subordinating Government-guaranteed obligations of KIM to its other debt and which remains without any Government endorsement, was to improve the credit position of the latter category. This could permit issuance of additional debt without any Government

endorsement. In this manner, a "cushion" would exist for the non-guaranteed debt in the form of the guaranteed loans plus the equity.

Direct Subsidies

Between 1921 and 1945, the government granted KIM subsidies aggregating about 14.9 million guilders (\$6.7 million at the old exchange rate). No subsidy from the government had been received by the company since 1945. However, the government paid the company an aggregate of 27.2 million guilders (\$7.1 million) as reimbursement for expenses and losses incurred in maintaining air services between Amsterdam and the former Netherlands East Indies during the period from December 1948 through July 1949. Normal service on this route was disrupted during that period when various countries cancelled the company's operating rights over their respective territories shortly after the conflict broke out between The Netherlands and the former Netherlands East Indies. The company, at the government's request, continued the service on an alternate but a much longer routing which resulted in a highly uneconomic operation.

Government Prerogatives

In authorizing the government to acquire KIM's capital stock, make loans, give guarantees or pay subsidies, several acts were adopted by The Netherlands States General (Parliament). One such agreement was approved by the Act of August 21, 1950 (Netherlands Statute No. K-366). Its effective conditions, among other things, require the company to provide adequate social welfare and pension plans for its employees, to maintain and operate airworthy aircraft, to transport the mails as tendered, to provide free transportation for designated government officials.

It is known that the "designated government officials" accorded free transportation are limited in number and volume of air travel.

In the past, the Government, because of its support (through guarantees, subsidies, etc.) enjoyed certain prerogative and special financial rights, including control over certain managerial decisions, a specified share of the profits in addition to dividends paid it as a shareholder and preferential treatment on liquidation.

In preparation of the public sale of its stock in 1956 and to simplify the capitalization of KIM, the company's Articles of Association were amended in August 1956. In addition to repurchasing 150,000 shares of its stock at par (15 million guilders), KIM paid 6 million guilders (\$1,500,000) to the government and thus eliminated the latter's special financial rights in the company.

Dividends Paid and Return to Government

In keeping with Dutch corporate policy, dividends, when declared, are premised on results of the previous year.

Total dividends as paid by KIM during the 1953 - 1956 period were as follows:

1953	\$1,296,300
1954	1,618,700
1955	1,941,000
1956	1,987,300
Total	<u>\$6,843,300</u>

As the government owned 98.4% of the KIM stock during this period, it may be safely surmised that it received approximately \$6.7 million in dividends from

KIM during the four years through 1956.

Based on its KIM holdings of 1,009,830 shares of common stock alone, the government subsequently received the following dividends from its investment:

	Dividend Rate	To Dutch Government
1957	7%	\$1,858,000
1958	7%	1,858,000
1959	7%	1,858,000
1960	7%	1,312,000
Total		<u>\$6,886,000</u>

In view of the substantial losses incurred since 1961 no dividend payments were made for that year and subsequent periods.

Hence, from 1953 through 1960, the Government obtained some \$13.7 million in dividend income on its KIM investment. This may be regarded as an offset to past direct subsidies paid KIM. However, this is without regard to any return on capital that is a normal expectation inherent in any investment.

Sources Used:

KIM Annual Reports - 1958-1963
KIM Prospecti, March 10, 1957 and May 1, 1957
ICAO Financial Data, Digest of Statistics,
1953 - 1963
Periodical files

~~CONFIDENTIAL~~

Summarized Balance Sheet Position

KLM

(As of December 31 1963)

	<u>Dutch Guilders (000)</u>	<u>U.S. \$ (000)</u>
Current Assets	203,473	\$ 56,521
Gross Fixed Assets	829,722	230,478
Less Res. for Depr.	<u>322,573</u>	<u>109,048</u>
Net Fixed Assets	437,149	121,430
Other Assets	<u>47,648</u>	<u>13,235</u>
Total Assets	<u>688,270</u>	<u>\$ 191,186</u>
Current Liabilities	165,459	\$ 45,960
Long-term Debt	483,472	134,298
Capital Stock:		
Preferred	35	10
Common	145,419	40,394
Surplus Reserves	(114,300)	(31,750)
Other Res. & Liab.	<u>8,185</u>	<u>2,274</u>
Total Capital & Liab.	<u>688,270</u>	<u>\$ 191,186</u>
Working Capital	<u>38,014</u>	<u>\$ 10,561</u>

Revenues and Net Income Accounts

(Years Ended December 31)

KLM - ROYAL DUTCH AIRLINES

	<u>Guilders (000)</u>	<u>(U.S. \$(000))</u>
		<u>Revenues</u>
1958	496,194	\$ 130,577
1959	545,381	143,521
1960	612,213	161,109
1961	593,287	164,802
1962	615,576	170,993
1963	590,929	164,147
		<u>Net Income</u>
1958	13,098	\$ 3,292
1959	15,423	3,875
1960	10,329	2,718
1961	(76,657)	(21,294)
1962	(75,513)	(20,976)
1963	(55,332)	(15,370)
		<u>Depreciation</u>
1958	73,366	\$ 19,307
1959	68,821	18,110
1960	81,334	21,404
1961	85,343	23,747
1962	88,899	24,694
1963	74,031	19,564

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QANTAS EMPIRE AIRWAYS, LIMITED

The Company

Queensland and Northern Territory Aerial Service, Limited, the forerunner of the present company, was formed on November 16, 1920 with an authorized capital of 1,000,000 shares of £1 par. The original paid-up capital totaled £6,307 (\$20,359).

After two years of charter operations, the first regular air service in Eastern Australia was inaugurated in 1922. New routes were progressively opened throughout Australia and in 1931, QANTAS joined with Imperial Airways, Limited of the United Kingdom in carrying the first experimental air mail between Australia and England.

Qantas Empire Airways, Limited, the present company, was formed on January 18, 1934. The new corporation combined the interests of QANTAS, Limited and Imperial Airways for operation of the Singapore/Brisbane section of the United Kingdom-Australia mail service. Each company held a 50 percent interest in Qantas.

The company became the designated operator of Australian international air services when the United Kingdom shareholding in Qantas was purchased by the Commonwealth of Australia on March 21, 1947, followed by the acquisition of QANTAS, Limited shares on June 30, 1947.

The Board of Directors is appointed by the Minister of Civil Aviation and, under the terms of a Financial Directive from the Minister, is charged with the responsibility of directing the operations of Qantas in accordance with the government's Civil

Aviation policy and of ensuring the proper use of public money invested in the company. Subject to the terms of the directive, the Board is authorized to direct the affairs of Qantas as a commercial undertaking and with due regard to the practices in existence prior to the acquisition of the shares by the Australian government.

Capital Stock

The capital stock of Qantas has been provided by the Commonwealth of Australia through the issuance of ordinary shares with a par value of £1 (\$2.24) each. As of March 31, 1963, £17.7 million (\$39,456,000) of the authorized share capital of £25 million (\$56 million) was outstanding.

The company's capital has been progressively increased to accommodate its expanding scope of operations. Aside from the increase of £1,500,000 (\$3,360,000) in 1953, which was received to assist in meeting a heavy commitment for new aircraft purchases made in 1954 and 1955, all of the capital subscriptions by the government have been provided for the construction of new buildings and ground facilities necessary to support the introduction and subsequent expansion of jet operations. Purchases of Boeing 707 jet aircraft and Lockheed Electras have been financed entirely from overseas loans and company funds.

In addition, the government of Australia has provided the company with capital advances totaling more than £5.3 million (\$11.8 million) at March 31, 1963, in the form of capital stock purchases.

With the exception of 1951, Qantas has paid dividends on its common stock every year since nationalization of the airline. For the period from

the year ended March 31, 1945 through March 31, 1963, a total of \$5.1 million has been paid to the government in the form of dividends. At effective rates of exchange, this was equivalent to a total of \$11.4 million.

Long-Term Debt

Since 1956, loans amounting to \$31,250,000 (\$70 million) have been arranged by the Commonwealth government in the United States to assist in financing a commitment of approximately \$46,875,000 (\$105 million) for the purchase of aircraft, spare parts and related equipment. Borrowings were made directly by the Commonwealth and the resultant funds were turned over to Qantas. Repayments on these borrowings are forwarded to the lenders directly by Qantas. These loans were:

a) A 1956 loan of \$12,053,571 (\$27 million) against an expenditure of approximately \$20,535,714 (\$46 million) for the purchase of seven Boeing 707 jet aircraft. Of the \$12,053,571 (\$27 million), \$4,120,536 (\$9,230,000) was borrowed from the International Bank for Reconstruction and Development (World Bank) at 4-3/4%, to mature during 1964-66. The remaining \$7,933,036 (\$17,770,000) was provided by U.S. institutional investors at 4-3/4% and was scheduled to mature between 1960 and 1964. The full loan was taken down by December 31, 1958 and repayments made as scheduled.

b) A 1958 loan of approximately \$5,803,571 (\$13 million) against an expenditure of \$8,035,714 (\$18 million) for five Electra aircraft. The funds were borrowed from a group of U.S. commercial banks at a 4-5/8 - 4-3/4% rate, with repayment scheduled in 10 equal semi-annual installments starting June 30, 1960. The total commitment was taken down by

December 31, 1959. Repayments are proceeding on schedule.

c) A 1960 loan of \$13,392,857 (\$30 million) against an expenditure of approximately \$18,303,571 (\$41 million) for the purchase of three additional Boeing 707 jets with turbofan engines and the modification of the engines on the existing fleet of 707 aircraft to turbofan configuration. Of this amount, \$11,383,929 (\$25.5 million) was provided through a guarantee from the Export-Import Bank.

In addition, Qantas borrowed \$466,429 (\$1 million) from the Bank of America in 1959 for the purchase of an office building in San Francisco. Another small loan for the purchase of staff housing in London was made in 1960.

Direct Subsidy

Qantas Empire Airways, Limited has operated at a profit in every year since operations were nationalized in 1947. Thus, the company has not received any direct subsidy during the period. However, as previously noted, the government has provided the necessary capital advances to Qantas which, lacking provision for repayment, may be considered as a direct grant of funds.

The government also allocates preferential facilities to Qantas at Commonwealth airports. Also, it has been reported that the runway extension at Perth airport will be sufficient to permit its use by smaller Qantas 707's, but not long enough for the takeoff requirements of Boeing 707 Intercontinental or DC-8 aircraft.

Sources Used:

Annual Reports - Qantas Empire Airways, 1950-1963

International Bank for Reconstruction and Development (World Bank), Annual Report 1956-1957
 Export-Import Bank of Washington, Annual Reports
 ICAO, Digests of Statistics (Financial Data)
 1953-1963
 Periodical files

Summarized Balance Sheet Position

QAWTAS
 (As of December 31, 1962)

	Australian Bonds (000)	U.S. \$ (000)
Current Assets	6,257	\$ 13,949
Gross Fixed Assets	64,875	144,616
Less Res. for Depr.	19,520	43,513
Net Fixed Assets	45,355	101,103
Other Assets	5,769	12,859
Total Assets	57,381	\$127,911
Current Liabilities	8,946	\$ 19,942
Long-term Debt	15,937	35,527
Capital Stock:		
Preferred		
Common	17,700	39,456
Surplus Reserves	67	149
Other Res. & Liab.	14,730	32,837
Total Capital & Liab.	57,381	\$127,911

Working Capital (2,689) (5,993)

Revenues And Income Accounts (Years Ended December 31)

QAWTAS

Australian Pounds
 (000)

U.S. \$
 (000)

Revenues

1958	22,070	\$ 49,437
1959	26,498	59,043
1960	39,511	88,153
1961	31,381	70,141
1962	37,603	83,822

Net Income

1958	(8)	\$ (18)
1959	687	1,531
1960	1,127	2,515
1961	470	1,051
1962	1,406	3,135

Depreciation

1958	2,194	\$ 4,915
1959	2,699	6,014
1960	4,652	10,379
1961	4,438	9,920
1962	5,213	11,620

SABENA BELGIAN WORLD AIRWAYS

The Company

Societe Anonyme Belge d'Exploitation de la Navigation Aerienn (SABENA), the chosen instrument of Belgian air transport policy, was organized in 1923. In form, it is a private corporation, but the Belgian government has always had a controlling influence in it in the form of absolute majority of votes in the stockholders' meetings. The proportion of the capital stock held by the government has been recently increased.

Capital Investment

Capital Stock. The capital stock of the company was increased from 600,000 shares of preferred stock B.F. 300 million (\$6 million) to B.F. 500 million in 1955 (1,000,000 shares preferred) and to B.F. 750 million (\$15 million) or 1,500,000 shares of preferred in 1958. The Law of April 9, 1958, permits a further increase to B.F. 1 billion (\$20 million) after January 1, 1960, but the increase has not yet taken place. Until 1960, the Belgian State through the Belgian government and the government of the colony of Belgian Congo, held exactly one-half of the preferred stock of the company (which consist of shares of B.F. 500 each) plus 31,000 shares of common dividend stock out of a total of 52,000. The dividend stock has been issued in return for intangibles rather than for monetary investment and has no specified book value on the company's balance sheet. These holdings gave the Belgian State an absolute majority of the capital stock. Since June 28, 1960, the participation of the Belgian State in the capital stock has been raised to B.F. 487,900,000 (\$9,758,000) in preferential shares plus 35,000 shares of common

stock, giving it 65.17% of the votes in the stockholders' meetings. In addition, the Republic of Congo, which recently became independent, and the former Trust Territory of Ruanda-Urundi (administered by Belgium) received a total of 24.83% of the stock, with private holdings being reduced to 10%.

Prior to 1960, the holders of preferred stock were entitled to a cumulative 5% dividend out of profits. Such dividends were actually paid for 1953 and 1954, but apparently in none of the subsequent years. From 1960 on, the preferred stockholders are entitled to a fixed 5% interest which is entered as an expense in the profit and loss statement. In 1960, and all subsequent years through 1963, this dividend was charged in the amount of B.F. 37.5million (\$720,500) annually. The State as the principal stockholder, thus obtains a return on its investment in the capital stock. The preferred stockholders are further entitled to a non-cumulative 1% dividend payable out of profits.

Long-term debt. SABENA has borrowed money from the Belgian State and from the colony of the Belgian Congo, as well as from certain government financial institutions. The most important form of government aid with respect to long-term debt, however, has been the extension of government guarantees to borrowings from other sources. By the law of June 22, 1960, the maximum limit of the State guarantee of loans was raised from B.F. 4 billion (\$80 million) to B.F. 6 billion (\$120 million), but only borrowings for the purchase of flight equipment may be guaranteed.

In addition to guaranteeing borrowings from other sources, the State, by the law of August 18, 1955, is authorized to pay one-half of the interest on such loans (but not less than 2% nor more than 3%). The State undertook to pay 2-3/8% interest (out of

the total interest of 4-3/4% on an issue of 20-year bonds Belgium government guaranteed, in the amount of 22 million Dutch guilders (\$6,076,400) placed by SABENA on the Dutch market in September 1961. These proceeds were applied to purchase two Caravelles. Details as to the interest paid by the State on other borrowings are not available. Listed as "financing expenses," which may be presumed to be interest charges, in the 1963 annual report was the amount of B.F. 191.9 million (\$3.8 million).

There has been an upward trend in the borrowings from the government institutions by SABENA throughout the years.

At the 1953 year-end, loans advanced by government institutions, as well as those bearing the guarantee of the state, aggregated some B.F. 802 million. At the 1963 year-end, state-guaranteed loans amounted to B.F. 3.65 billion (\$73 million). Further, as of this recent date, other loans not guaranteed by the State amounted to B.F. 1.1 billion (\$22 million). Moreover, SABENA also showed as outstanding a direct loan from the State (obtained in 1960) in the amount of B.F. 134 million (\$2,680,000). In addition, "loans with effective guarantees" at the 1963 year-end were reported at B.F. 60.3 million (\$1.2 million).

The company's indebtedness to the State or guaranteed by the State bears varying rates of interest, ranging from 3.5% to 5.75%. However, as already mentioned, one-half of the interest on loans guaranteed by the State since 1955 is itself paid by the State.

From time to time, SABENA's indebtedness to the State has been converted into equity investment.

For example, under the Law of April 9, 1958, the remaining indebtedness of the company to the State (in the amount of B.F. 53,607,000 or \$1,072,140 at the end of 1958) was applied toward the subscription to additional shares acquired when the capital stock of SABENA was increased to B.F. 750 million (\$15 million). The balance of the price was covered by the cancellation of a part of the recapturable subsidy indebtedness of SABENA to the State (see below).

Trade reports have indicated that SABENA and the Belgian government on one hand have agreed with the Republic of the Congo on the other hand to settle some financial issues. This includes debt due the former Belgian Congo administration (by SABENA) in the amount of B.F. 71.5 million (\$1.43 million) outstanding in 1960. Further, the Belgian Congo has also guaranteed SABENA's debt in the amount of B.F. 75 million (\$1.5 million).

As previously noted, AIR CONGO is a 25% shareholder in SABENA.

When Air Congo came into being some five years ago, SABENA emerged with a 30% interest in the Congolese airline.

Presumably, the settlement with the Congolese may involve some exchange of the loan due that government for stock held by SABENA in Air Congo.

Direct Subsidy

Under the law of April 6, 1949, SABENA is entitled to receive a subsidy in the full amount required for the amortization of the airline's flight equipment not covered by the company's own revenues. This subsidy is recapturable without interest out of

one-half of future profits after provision for a reserve and, before 1960, for the cumulative dividends on preferred stock.

Under the law of April 9, 1953, the accumulated subsidy was to be reduced by B.F. 71,393,000 (\$1,427,860) in part payment by the State for the additional stock it was to acquire when the stock capital was raised to B.F. 750 million (\$15 million) in 1958 and to B.F. 1 billion (\$20 million) after January 1, 1960. The amount applied to the first increase was B.F. 8,893,000 (\$177,860).

The payment by the State of one-half of the interest on the loans guaranteed by it under the law of August 18, 1955, may be also regarded as a form of direct subsidy.

Up to and through 1957, the accumulated subsidy received by SABENA aggregated some B.F. 175.2 million (\$3.5 million). This amount is after some slight recoveries by the State in 1957.

In subsequent years, subsidies received by SABENA according to article 33 of the Statutes have been as follows:

	<u>Subsidies</u>	
	(millions) B.F.	(thousands) U.S. Dollars
1958	120.3	2,406
1959	197.7	3,953
1960	131.7	2,635
1961	389.3	7,786
1962	470.3	9,406
1963	274.7	5,494

Sources Used:

SABENA, Annual Reports, 1952-1963
Moniteur Belge, May 17, 1923
Pasinomie, 1958, 1959, 1960 (Collection of Belgian
 Laws & Decrees)
 Prospectus for the issue of SABENA bonds in the
 Netherlands, October 1961
 ICAO, Digests of Statistics (Financial Data)
 1953-1962
 Periodical files

Summarized Balance Sheet Position

SAEENA
(As of December 31, 1963)

	Belgian Francs (000)	U. S. \$ (000)
Current Assets	2,286,066	\$ 45,721
Gross Fixed Assets	7,705,812	154,116
Less Res. for Depr.	3,344,326	66,887
Net Fixed Assets	4,361,486	87,230
Other Assets	877,802	17,555
Total Assets	7,525,354	\$150,507

Current Liabilities	1,592,779	\$ 31,856
Long-term Debt	4,905,900	98,117
Capital Stock:		
Preferred	750,000	15,000
Common	---	---
Surplus Reserves	---	---
Other Reserves & Liab.	276,675	5,534
Total Capital & Liab.	7,525,354	\$150,507

Working Capital	693,287	\$ 13,865
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Revenues And Income Accounts

Years Ended December 31

SAEENA

	Belgian Fr. (000)	U.S. \$ (000)
Revenues		
1958	3,898,548	\$ 77,971
1959	3,675,152	73,503
1960	4,668,593	93,372
1961	4,597,733	92,362
1962	3,761,077	75,599
1963	4,201,879	84,036

	Net Income	
1958	(11,468)	\$ (229)
1959	(26,336)	(537)
1960	123,846	2,477
1961	53,338	1,072
1962	38,000	764
1963	N.A.	N.A.

	Depreciation	
1958	204,677	\$ 4,094
1959	254,312	5,086
1960	350,117	7,002
1961	420,072	8,439
1962	422,306	8,488
1963	579,219	11,584

SCANDINAVIAN AIRLINES SYSTEM

The Company

Scandinavian Airlines System (SAS) is a consortium comprised of Det Danske Luftfartselskab (DDL), a Danish corporation, Det Norske Luftfartselskap (DNL), a Norwegian corporation, and Aktiebolaget Aerotransport (ABA), a Swedish corporation. The consortium, formed under an agreement approved on February 8, 1951, is a single operating organization with responsibility for the entire commercial aviation business -- both domestic and international -- formerly operated by the three parent companies. The agreement, as approved by the governments of Denmark, Norway and Sweden, as amended, now runs to September 30, 1985.

The consortium is managed by a board of directors consisting of six voting representatives of each parent company with a directive to operate the enterprise according to "sound business considerations, practice and policy."

Capital Stock

The total capital of SAS at September 30, 1963, aggregated 169,400,000 Swedish crowns (\$32.6 million). This has been provided by the three national companies -- Swedish ABA, Danish DDL, and Norwegian DNL -- in the ratio of 3:2:2, respectively.

	<u>Swedish Crowns</u>	<u>U.S. Dollars</u>
ABA (3/7)	72,600,000	\$13,982,800
DDL (2/7)	48,400,000	9,321,800
DNL (2/7)	48,400,000	9,321,800
Total	<u>169,400,000</u>	<u>\$32,626,400</u>

The capital of SAS remained unchanged for the ten year period since the formation of the consortium through September 30, 1960. However, in December 1960, SAS requested its parent corporations to institute negotiations with the Ministers of Transportation of the respective countries with a view to increasing the capital invested in the organization. This followed the heavy loss of 84 million Swedish crowns (\$16,380,000) sustained in fiscal 1960 and the deficit of 89.6 million Swedish crowns (\$17,472,000) for the year ended September 30, 1961.

While an official determination of the new capital contributions by the parent corporations has not been made available, it has been reported that an increase of 210,000,000 Swedish crowns (\$40,950,000) was contributed in the following amounts:

	<u>Swedish Crowns</u>	<u>U.S. Dollars</u>
ABA (2/7)	90,000,000	\$17,550,000
DDL (2/7)	60,000,000	11,700,000
DNL (2/7)	<u>60,000,000</u>	<u>11,700,000</u>
	<u>210,000,000</u>	<u>\$40,950,000</u>

As of May 1958, the latest date for which this information is available, the Swedish corporation (ABA) had issued 500,000 shares of its capital stock, which was 50 percent owned by the government and 50 percent by Swedish nationals.

The Norwegian corporation (DNL), at the same date, had issued 300,000 shares of its capital stock, with 50 percent owned by the government and 50 percent by Norwegian nationals.

The Danish corporation (DDL) has two classes of stock -- Series A and Series B. Voting rights exist only in the Series A stock, of which more than 76% was owned by the government and Danish nationals in May, 1958. The Series B stock is owned entirely by the government. It is believed that the government of Denmark holds approximately 50 percent of all outstanding stock.

It is not known whether the equal distribution of ABA, DDL and DNL stock between the government and private interests has been altered due to the recent financing undertaken by the parent corporations to satisfy the additional capital needs of SAS. It has been reported that there was some difficulty in raising private funds; thus the government ownership of one or all of the three national corporations may have been increased during the past few years.

In accordance with the original consortium agreement, the three parent corporations shall share in any profit or loss reported by SAS on the basis of their respective shares of the company.

The published reports of SAS fail to disclose a profit or a loss for the fiscal years 1953, 1954, 1958 and 1959. (The Profit and Loss Accounts for these years show a balance as between Expenses and Income. Indirect government contributions, if any, may well be included in the Income Accounts of "Other Operating Revenue" or "Sundry Income." No detail is available for these accounts). A loss of 84 million Swedish crowns (\$16,380,000) was sustained for the fiscal year ended September 30, 1960. A further loss of 89 million Swedish crowns (\$17,300,000) was reported for fiscal 1961. In fiscal 1962, the loss was reduced to \$4.7 million. For fiscal 1964, net earnings are indicated at \$13.5 million.

As a result of the 1959 agreement on the aid guaranteed by the parent companies in the event of an operating loss incurred by SAS, the company may not pay a dividend so long as guaranteed amounts drawn have not been repaid in full. Also, no future dividend may exceed 5 percent of share capital. (For information on guarantees see section entitled Direct Subsidies).

Long-Term Debt

Long-term debt loans of SAS have been provided primarily by three sources; the Scandinavian governments, U.S. commercial banks and insurance companies, and banks in the three Scandinavian countries. In recent years, credit support was also received from aircraft manufacturers.

The funds provided by the Scandinavian governments were advanced to SAS via the three parent companies. These loans were the main source of long-term debt in the 1953-55 period. SAS, as of September 30, 1963, remained indebted to the Danish government for approximately 7.1 million Swedish crowns (\$1,375,000) at 5% interest per annum. The Swedish and Norwegian loans were retired in 1955.

Recent equipment purchases have been financed mainly through borrowings in the United States and debenture loans from Scandinavian banks.

The total amount of long-term debt raised in the United States was approximately 253,900,000 Sw. cr. (\$49 million). Of this, approximately, 171 million Sw. cr. (\$33 million) was borrowed from U. S. commercial banks at 4-3/8%, maturing quarterly at an annual rate of 34,200,000 Sw. cr. (\$6,600,000) between March 31, 1961, and December 31, 1965. By September 30,

1962, this loan had been paid down to 194 million Sv. cr. (\$37,400,000) and by September 30, 1963, to 113.2 million Sv. cr. (\$21,800,000).

The remaining 82,900,000 Sv. cr. (\$16,000,000) was borrowed from insurance companies at a 6% interest rate. This loan is repayable in annual installments of 8,290,000 Sv. cr. (\$1,600,000) from 1966 through 1975. Neither the U. S. commercial bank nor the insurance company loans are guaranteed by the Scandinavian governments. However, SAS is required to maintain certain ratios between long-term debt and outstanding capital during the period in which these obligations are outstanding.

In addition, groups of banks in Sweden, Norway and Denmark have provided SAS with debenture loans totalling 157 million Sv. cr. (\$30,712,500). The initial obligation of 78,750,000 Sv. cr. (\$15,356,250) was raised during fiscal 1957-58 at 6-1/2%, while an additional 78,750,000 Sv. cr. was borrowed during fiscal 1960 at 7%. Both of the loans are repayable in the ten year period July 1, 1973-1982. They are subordinated to all other long-term debt. No information is available as to government guarantee on the debentures.

In acquiring its fleet of Caravelles, SAS obtained a substantial credit from the aircraft builder, Sud Aviation. As of September 30, 1962, the debt to Sud amounted to 120.7 million Sv. cr. (\$23.4 million). During fiscal 1963, this debt was reduced to 25 million Sv. cr. (\$4,850,000).

Direct Subsidies

Under provisions of the original agreement between the three governments, it was decided that certain guarantees should be extended to SAS to cover possible operating losses. This arrangement, valid for a five year period to September 30, 1955,

guaranteed direct aid on a deficit-covering basis as required by SAS up to the following annual amounts:

Sweden	2,200,00 Sv. cr.	(\$429,000)
Denmark	2,000,000 D. cr.	(\$293,000)
Norway	2,000,000 N. cr.	(\$282,000)
Total-1 yr.	5,148,800 Sv. cr.	(\$1,004,000)
5-yrs.	25,744,000 Sv. cr.	(\$5,020,000)

A new agreement was reached in 1955, which was valid for a five year period throughout September 30, 1960. The sums guaranteed were increased to the following annual amounts:

Sweden	5,000,000 Sv. cr.	(\$ 975,000)
Denmark	4,500,000 D. cr.	(\$ 659,250)
Norway	4,500,000 N. cr.	(\$ 634,500)
Total - 1 yr.	11,634,800 Sv. cr.	(\$2,268,750)
- 5 yrs.	58,174,000 Sv. cr.	(\$11,343,750)

This covenant was superseded by a new agreement of August 20, 1959. The guarantee was extended for a further five year period (to September 1965) on that date and the yearly amounts guaranteed were raised as follows:

Sweden	7,500,000 Sv. cr.	(\$ 1,462,500)
Denmark	6,750,000 D. cr.	(\$ 988,875)
Norway	6,750,000 N. cr.	(\$ 951,750)
Total - 1 yr.	17,452,200 Sv. cr.	(\$ 3,403,125)
; yrs.	87,260,000 Sv. cr.	(17,015,625)

According to the agreements, aid is extended through the respective national companies. If the funds advanced by a parent company in any particular year are greater than the maximum annual amount guar-

anted, the parent can obtain coverage for the difference during the subsequent years remaining in the agreement. The amounts extended to SAS are currently repayable from future profits at one percent interest per annum.

Sources Used:

Scandinavian Airlines System - Annual Reports
1953 - 1953
Scandinavian Airlines System - Consortium
Agreement, Oct. 1950
Swedish Parliament, Bill No. 260 of 1950;
Bill No. 134 of 1959; Bill No. 133 of 1961;
Bill No. 159 of 1961
ICAO Digest of Statistics (Financial Data)
1953 - 1962
Periodical files

Summarized Balance Sheet Position

SAS
(As of September 30, 1953)

	Swedish Kr. (000)	U.S. \$ (000)
Current Assets	248,200	\$ 47,800
Gross Fixed Assets	1,053,900	202,900
Less Res. for Depr.	512,500	98,720
Net Fixed Assets	541,400	104,270
Other Assets	25,200	4,860
Total Assets	814,800	156,930
Current Liabilities	286,500	\$ 51,730
Long-term Debt	339,300	55,350
Capital Stock:		
Preferred	---	---
Common	190,400	36,570
Surplus Reserves	---	---
Other Res. & Liab.	15,500	31,780
Total Capital & Liab.	814,800	\$156,930
Working Capital	(20,400)	\$ (3,930)

Revenues and Income Accounts

SAS

Swd. Kr. (000) U.S. \$ (000)

Revenues

1958	558,574	\$107,972
1959	578,935	111,734
1960	678,699	131,057
1961	729,243	141,189
1962	748,761	145,165
1963	923,600	177,885
1964	---	197,800

Net Income

1958	(84,000)	\$(16,220)
1959	(89,600)	(17,347)
1960	(24,500)	(4,750)
1961	21,000	4,045
1962	---	13,500
1963		
1964		

Depreciation

1958	42,570	\$ 8,248
1959	44,353	8,560
1960	78,466	15,152
1961	105,574	20,460
1962	85,649	16,505
1963	90,900	17,507
1964	---	16,500

SWISSAIR

The Corporation

Societe Anonyme Suisse Pour La Navigation Aerienne (Swissair) was founded on June 1, 1931, through the amalgamation of Ad Astra Aero Cy., Limited, and Balair, Air Traffic Cy., Limited. Although Swissair is a national corporation (wholly owned by Swiss citizens, corporations and government entities) it is by no means nationalized. The company is independently managed and primarily responsible to its stockholders.

Capital Stock

According to Swissair's Articles of Incorporation, ownership of shares is limited to Swiss nationals. Further, provision is made for ownership of approximately 30% of the stock by governmental units such as the Swiss Federal Confederation, the separate cantons and municipalities, Swiss Federal Railways and the Post, Telegraph and Telephone Administration. The bulk of the stock, however, is held by private citizens; there were more than 10,500 shareholders as of December 31, 1963. The company's shares are listed on the Zurich Bourse.

At December 31, 1960, the capital stock of Swissair consisted of 300,000 shares of 350 Swiss francs par or a total of Swiss francs (Sw. Fr.) 105 million (\$24,465,000). The actual distribution of the stock was as follows:

Federal Government	
Swiss Federal Railways	3.5%
Post, Telegraph & Telephone Administration	3.5%
Other Government Agencies	4.0%

Swiss Cantons and Municipalities	20%
Swiss Corporations and Swiss Nationals	69%

Government agencies and private shareholders have received identical dividends since 1951. Payments amounted to 4% of par value in the years 1951-1954, 6% in 1955 through 1959, 4% in 1960, none in 1961, 5% in 1962, and 6% in 1963. Prior to 1958, dividends were restricted to 6% of par value by the corporate statutes. While this restriction was lifted by the General Assembly of Stockholders on April 2, 1958, the 6% dividend rate has thus far not been exceeded.

Increases in capital stock outstanding have corresponded with the company's fleet renewal and expansion programs. Accordingly, the capital stock of Swissair was supplemented by Sw. Fr. 28 million (\$6,524,000) in 1956, Sw. Fr. 21 million (\$4,893,000) in 1958, and Sw. Fr. 42 million (\$9,786,000) in 1959. All of these issues were sold publicly, with the government of Switzerland subscribing to approximately 30% of the shares in each case. At a stockholders' General Meeting in 1964, the authorized share capital was increased from Sw. Fr. 105 million (\$24,465,000) to Sw. Fr. 140 million (\$32.4 million).

Under the Articles of Incorporation, 10% of the net profit remaining after all expenses and amortization must be appropriated to the Statutory Reserve fund until it reaches 50% of the capital stock of the corporation. At the 1963 year-end, this Statutory Reserve account amounted to Sw. Fr. 4.7 million (\$1.1 million).

The category "special reserves," created in 1948, resulted from a change in accounting practice by Swissair. Funds lumped under this account pre-

viously were allocated for purposes for which they are no longer needed. At December 31, 1963, the "special reserve" account amounted to Sv. Fr. 6 million (\$1,390,000).

Long-Term Debt

The majority of Swissair long-term obligations are made up of bonds which were offered to the public in the following amounts:

- 1) Sv. Fr. 30 million (\$6,990,000) 3-3/4% of 1956 maturing on October 31, 1971, payable by anticipation on October 31, 1966.
- 2) Sv. Fr. 30 million (\$6,990,000) 4% of 1958 maturing on October 15, 1973, payable by anticipation on October 31, 1970.
- 3) Sv. Fr. 50 million (\$11,650,000) 4% of 1960 maturing on January 31, 1978, payable by anticipation on January 31, 1972.
- 4) Sv. Fr. 50 million (\$11,650,000) 4% of 1960 maturing on October 31, 1976, payable by anticipation on October 31, 1972.

All of these bonds were outstanding as of December 31, 1963.

None of the above-mentioned bond issues is guaranteed by the government. Further, Swissair has agreed not to accept special guarantees on any other loans without similarly securing presently outstanding borrowings.

In addition, a government pension fund, The Swiss Old Age and Survivors Insurance Fund, granted the company a loan of Sv. Fr. 20 million (\$4,660,000) at 3-1/2% per annum under agreements of November 10, 1959/January 10, 1960. This issue, which matures in 15 years, is repayable after the third year at the rate of Sv. Fr. 1.5 million (\$349,500) per year,

with the final annual payment totaling Sv. Fr. 2 million (\$466,000). This was reduced to Sv. Fr. 17 million (\$394,000) as of December 31, 1963.

All of the above loans have been utilized to finance purchases of new aircraft, spare parts and related equipment.

In respect to the Corvair 990's (Coronado's) purchased by Swissair, General Dynamics, in 1962, granted the airline a credit of Sv. Fr. 40.2 million (\$9.3 million). This obligation was reduced to Sv. Fr. 2.5 million (\$578,750) in 1963 by virtue of obtaining a medium-term credit from Swiss banks.

Short-Term Borrowings

Swissair has an agreement with three leading Swiss banks (Swiss National Bank, Lugano, Swiss Credit Bank, Zurich; and the Swiss Bank Corporation, Basel) for a line of short-term credit of an undetermined amount. Outstanding short-term borrowings from Swiss banks in the years since 1953 have fluctuated to meet the airline's requirements and have been as follows:

At December 31:	Short-Term Bank Loans	
	Swiss France	U.S. Dollars
	(in millions)	
1953	16.5	\$3.8
1954	17.5	4.1
1955	21.2	4.9
1956	---	---
1957	19.7	4.6
1958	---	---
1959	9.8	2.3
1960	.5	.1
1961	3.0	.7
1962	16.1	3.7
1963	27.0	6.2

While additional bank credits were available to Swissair at the 1963 year-end, they were not utilized.

In addition, under a law of 1950, the Swiss federal government is authorized to make short-term interest-bearing loans to Swissair up to a maximum of Sw. Fr. 3 million (\$699,000). However, the company has not availed itself of this privilege in the period under review.

Direct Subsidies

Swissair has not received any direct operating subsidies from the Swiss government in the period under review. However, the government did contribute towards the expenses of training instructors, pilots, navigators, radio and telegraph technical personnel in the years 1953 through 1958.

Provision of Equipment

Due to the heavy losses sustained by Swissair in 1949 and 1950, which partially reflected devaluation of currency among European nations, the Swiss federal government, under a law of 1950, was authorized to purchase two DC-6B's on order for Swissair for Sw. Fr. 15,000,000 (\$3,495,000). These aircraft were then leased to Swissair. The company paid a charter fee of Sw. Fr. 7,108,542 (\$1,656,290) to the government for lease of the aircraft from 1951 through 1954. Toward the end of 1955, improvement in the consolidated position of Swissair enabled the corporation to purchase the two DC-6B's at the original price less all charter fees paid to the government. Thus, this aid was equal to a five-year non-interest bearing loan of Sw. Fr. 15 million (\$3.5 million) from the government.

In 1950, the Swiss government also undertook guarantee of the amortization on Swissair's fleet up to Sw. Fr. 1,500,000 (\$349,500) per annum and for a total of not more than Sw. Fr. 15 million (\$3.5 million) if the company was unable to amortize the equipment under its statutory procedure. Swissair did not need to avail itself of the facility since the company returned to profitable operations in 1951.

Since December, 1959, Swissair has provided its stockholders with a free air travel ticket equivalent to 10 Swiss Francs for each share of stock held. Management has declared that it will continue this practice.

Sources Used:

Swissair Annual Reports -- 1953 to 1963

Swissair By-Laws, 1959 Edition

Swissair Loan Prospecti -- January and Oct., 1960

ICAO, Digests of Statistics (Financial Data)

1963-62

Switzerland, Message du Conseil Federal a l'Assemblee, June 1950, August 1950, November 1950,

April 1953, March 1958, April 1958.

Periodical files

Summarized Balance Sheet Position

SWISSAIR
(As of December 31, 1962)

	Swiss Francs (000)	U.S. \$ (000)
Current Assets	129,508	\$ 30,004
Gross Fixed Assets	544,184	125,979
Less Reserve for Depr.	178,777	41,367
Net Fixed Assets	365,407	84,592
Other Assets	---	---
Total Assets	495,015	\$ 114,596

Current Liabilities	170,531	\$ 39,478
Long-term Debt	177,900	41,184
Capital Stock:		
Preferred	---	---
Common	105,000	24,308
Surplus Reserves	515	142
Other Reserves & Liabilities	40,969	9,484
Total Capital & Liabilities	495,015	\$ 114,596
Working Capital	(40,923)	\$ (9,474)

Revenues And Income Accounts
(Years Ended December 31)

SWISSAIR

	Swiss Francs (000)	U.S. \$ (000)
Revenues		
1958	236,554	\$54,904
1959	259,042	59,916
1960	297,241	69,049
1961	335,750	77,486
1962	404,256	93,600

	Net Income
1958	5,102
1959	7,498
1960	4,919
1961	127
1962	7,640

	Depreciation
1958	21,824
1959	25,693
1960	25,662
1961	25,046
1962	52,064

FINANCING ASSISTANCE TO
FOREIGN AIRLINES BY U.S. AGENCIES

THE EXPORT-IMPORT BANK OF WASHINGTON

To implement actively U.S. exports and imports, Congress, in 1944, created the Export-Import Bank of Washington as a banking organization. The Bank was continued as an agency of the United States by subsequent acts of Congress.

The Bank is authorized to have a capital stock of \$1 billion and may borrow from the U.S. Treasury on its own obligations up to \$6 billion at any one time.

The Export-Import Bank's operations are guided by the following main principles:

1. The Bank extends loans and guarantees for the primary purpose of promoting the export and import trade of the United States.
2. The Bank generally makes loans only for specific purposes.
3. The Bank's dollar loans must offer reasonable assurance of repayment in United States dollars.
4. The Bank generally extends credit only to finance purchases of material and equipment produced or manufactured in the United States and of associated technical services of U.S. firms.
5. The Bank supplements and encourages the

utilization of private capital in export and import trade in overseas investments generally.

From the Bank's formation in 1934 to date, U.S. aircraft and equipment aggregating about \$850 million in billings have been financed through authorized net credits and guarantees in excess of \$530 million extended by the Bank to foreign airlines.

In general, the regular repayment term on aircraft credits has been five years with respect to propeller-driven aircraft and seven years respecting straight jet equipment. Repayments are required semi-annually over the term of the loan usually dating from delivery of the equipment. Interest rates have ranged from 3-1/2% to as high as 7%.

Wherever required, guarantees of the government and of the lender are obtained and efforts are made for as large a participation as possible in the equity of the commitment by others, thus cushioning Eximbank's credit exposure.

In the spring of 1962, the Bank introduced its guarantee program in the financing of jet aircraft. Since that time, all jet aircraft assistance has been authorized under the guarantee program or transferred from a direct loan to a guarantee basis. Under the Bank's guarantee program, the foreign buyer is expected to make a cash down-payment of 10 percent and the American exporter is expected to carry at least 15 percent of the balance. In this manner, the Bank has some assurance that the buyer is regarded as responsible and creditworthy.

Credits extended by the Bank to finance foreign airline aircraft purchases in the United States during the nine-year period 1956-1964 are listed in Schedules A and B.

There is no doubt that the Eximbank has been a potent factor in supporting U.S. aircraft sales to foreign airlines. It is an activity warmly supported by the U.S. aircraft manufacturing industry.

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT (WORLD BANK)

The United States is a major participant in the International Bank for Reconstruction and Development (World Bank). Representatives of 44 nations present at the United Nations Monetary and Financial Conference held at Bretton Woods, N.H., in July 1944, formulated the Articles of Agreement of the International Bank for Reconstruction and Development. Official existence of the Bank dates from December 27, 1945, when the Articles of Agreement were signed in Washington, D.C., by representatives of 28 governments. The Bank began operations on June 25, 1946. As of March 31, 1961, 68 countries were members of the Bank.

The purposes of the Bank are (1) to assist in the reconstruction and development of its member countries by facilitating the investment of capital for productive purposes, and thereby promote the long-range growth of international trade and the improvement of standards of living; (2) to make loans

for productive purposes out of its own funds when private capital is not available on reasonable terms; and (3) to promote private foreign investment by guarantees of and participations in loans and investments made by private investors.

The World Bank, since its existence, has made a few loans to foreign airlines. These credits were as follows:

<u>Country and Airline</u>	<u>Original Amount (000)</u>	<u>Interest Rate</u>
<u>Australia</u> Qantas	\$9,230	4-3/4%
<u>India</u> Air-India	5,600	5-1/2%
<u>Netherlands</u> KLM	7,000	4-1/2%

Only the Qantas loan is presently outstanding and to the extent of \$6.5 million.

Thus far, the World Bank has not been a major factor as has the Eximbank in financing foreign airline aircraft purchases but has the potential to develop in this area.

INTERNATIONAL FINANCE CORPORATION

The International Finance Corporation was established in July 1956. Its purpose is to encourage the growth of productive private enterprise, particularly in the less developed areas of the world. Although IFC is closely affiliated with the International Bank for Reconstruction and Development (World Bank), it is a separate legal entity and its funds are entirely separate and distinct from those of the Bank.

The available reserves of IFC are currently around \$120 million. Membership is open only to countries which are members of the International Bank.

While no loans or credit have, as yet, been made for aircraft purchases by foreign airlines, the IFC has the potential to be of assistance in this respect.

SCHEDULE A
(Page 1)

EXPORT-IMPORT BANK CREDITS
AUTHORIZED FOR TRANSPORT AIRCRAFT PURCHASES
1956 - 1964

Authorized	C	Carrier	U.S. Manufacturer	E.I.B. Investment	Interest Rate	Total Cost	Type of Aircraft	Number of Aircraft
1956	Brazil	Panair do Brasil	Douglas	\$6,900,000	5-1/2%	\$12,197,965	DC-7-C	4
1956	Brazil	VARIG	Lockheed	3,950,000	5-1/2%	7,000,000	1049-G	3
1956	Indonesia	GARUDA	Convair	7,500,000	3-1/2%	7,500,000	340	8
1956	Japan	J.A.L.	Douglas	7,700,000	5-1/2%	13,548,065	DC-7-C	4
1956	Japan	J.A.L.	Douglas	17,186,000	5-1/2%	30,551,800	DC-8	4
1957	Brazil	LOIDE	Douglas	4,295,000	5-1/2%	7,633,887	DC-6-A	4
1957	Brazil	Cruzeiro do Sul	Convair	2,105,525	5-3/4%	3,743,156	440	4
1957	France	Air France	Boeing	46,000,000	5-1/2%	118,300,000	707	17
1957	Indonesia	GARUDA	Convair	1,781,000	5-1/2%	2,786,400	440	3
1957	Pakistan	P.I.A.	Lockheed	3,284,500	5-3/4%	5,471,364	1049-H	2
1957	Venezuela	AVENSA	Fairchild	1,400,000	5-1/2%	2,382,879	F-27	5
1958	Italy	ALITALIA	Douglas	18,300,000	5-1/2%	23,917,701	DC-8	4
1958	United Kingdom	Clanair, Ltd.	Douglas	1,100,000	5-1/2%	1,843,000	DC-6-A	1
1958	United Kingdom	N.A.O.C.	Douglas	1,100,000	5-1/2%	1,843,000	DC-6-A	1
1959	Belgium	SABENA	Boeing	20,000,000	5-3/4%	35,646,381	707	5
1959	Ecuador	AREA	Fairchild	216,000	6%	381,497	F-27	1
1959	France	TAI	Douglas	6,000,000	5-3/4%	16,150,000	DC-8	2
1959	Indonesia	GARUDA	Lockheed	5,000,000	5-1/2%	9,902,699	Electra	3
1959	U. So. Africa	S.A.A.	Boeing	16,000,000	5-3/4%	26,500,000	707	3

SCHEDULE A
(Page 2)

<u>Authorized</u>	<u>Country</u>	<u>Carrier</u>	<u>U. S. Manufacturer</u>	<u>E. I. B. Investment</u>	<u>Interest Rate</u>	<u>Total Cost</u>	<u>Type of Aircraft</u>	<u>Number of Aircraft</u>
1960	Australia	QANTAS	Boeing	\$25,500,000	5-3/4%	\$40,504,000	707	3
1960	Brazil	VARIG	Boeing	6,900,000	5-3/4%	13,902,560	707	2
1960	Brazil	Panair do Brasil	Douglas	13,840,000	5-3/4%	20,349,696	DC-8	2
1960	Ethiopia	EAL	Boeing	10,000,000	5-3/4%	14,634,774	720-B	2
1960	France	TAI	Douglas	3,400,000	5-3/4%	6,813,124	DC-8	1
1960	India	Air-India	Boeing	4,100,000	5-3/4%	6,000,000	707	1
1960	Israel	El Al	Boeing	8,925,000	5-3/4%	13,125,000	707	2
1960	Spain	IBERIA	Douglas	14,100,000	5-3/4%	20,600,000	DC-8	3
1961	India	Air India	Boeing	8,100,000	5-3/4%	11,900,000	707	2
1961	Israel	El Al	Boeing	3,650,000	5-3/4%	6,800,000	707	1
1961	Pakistan	P. I. A.	Boeing	12,000,000	5-3/4%	17,700,000	707	2
1961	Colombia	Aeronaves	Boeing	9,520,000	5-3/4%	14,000,000	720	2
1961	Japan	J. A. L.	Gen. Dynamics	12,200,000	5-3/4%	17,915,000	880	3
1961	Japan	J. A. L.	Douglas	4,300,000	5-3/4%	6,251,000	DC-8	1
1963	Japan	J. A. L.	Gen. Dynamics	9,180,000	Gtd.	13,500,000	880	3
1963	Japan	J. A. L.	Douglas	8,874,000	Gtd.	13,049,000	DC-8	2
1963	Japan	Nippon	Boeing	12,886,000	5-3/4	18,950,000	727	3
1964	Mexico	Aeronaves	Douglas	3,591,000	5-3/4	5,585,000	DC-8	1
1964	Greece	Olympic	Boeing	16,080,000	Gtd.	23,650,000	727	4

SCHEDULE B

EXPORT-IMPORT BANK GUARANTEES
AUTHORIZED FOR TRANSPORT AIRCRAFT PURCHASES
1962 - 1964

Authorized	Country	Carrier	U.S. Manufacturer	E. I. B. Guarantee	Interest Rate	Total Cost	Type of Aircraft	Number of Aircraft
1962	Israel	EL AL ISRAEL	Boeing	\$ 12,311,406	6%	\$ 16,095,000	720	2
1962	Venezuela	VENEZOLANA	General Dynamics					
1962	Japan	INTERNACIONAL JAPAN	General Dynamics	7,210,125	6%	9,600,000	880-M	2
1962	Japan	JAPAN	Douglas	6,944,104	6%	8,776,034	880	2
1962	Pakistan	P I A.	Boeing	6,084,397	6%	7,721,431	DC-8	1
1962	Ethiopia	ETHIOPIAN	Boeing	14,302,987	5-3/4%	17,770,394	720	2
				11,815,000	5-3/4%	14,634,774	720B	2
1963	Spain	I. L. A.	Douglas	6,250,500	5-3/4%	8,540,850	DC-8	1
1963	Venezuela	V. I.	Gen. Dyn.	3,576,375	6%	4,500,000	880	1
1963	Ivory Coast	AIR AFRIQUE	Douglas	11,310,000	6%	15,093,000	DC-8	2
1963	Spain	I. L. A.	Douglas	11,465,500	6%	14,420,000	DC-8	2
1963	Japan	JAPAN	Gen. Dyn.	10,815,188	6%	13,500,000	880	3
1963	Japan	JAPAN	Douglas	10,454,681	6%	13,048,589	DC-8	2

AN ANALYSIS OF FOREIGN
AIRLINE EQUIPMENT FINANCING AS
A GUIDE TO ACQUIRING SST AIRCRAFT

PAST PATTERNS

The international airlines of foreign registry -- or foreign airlines -- have utilized a variety of means to finance their fleets of subsonic jet aircraft. The means and methods applied in this financing have been detailed in the historical reviews for the major individual carriers in Sections I and II of this report.

In all instances, these individual carriers represent the national airline of their respective countries; ownership, in varying degrees, being vested with the governments concerned.

Government Support Paramount

Such government ownership -- and the attendant support -- has greatly facilitated the financing required to purchase aircraft and supporting equipment.

Government support in these instances has been made available to the national airlines through one or more of the following means:

1. Provision of equity capital
2. Granting of direct loans
3. Government guarantee of loans obtained by airline
4. Purchase of equipment by government and lease to national airline

5. Direct and indirect subsidies, permitting national airline to maintain operations including servicing of capital structures

Government support to the financial structure of a national airline can be most effective as well through indirect means. The device utilized by The Netherlands government to aid KLM and, as noted in the financial review of that airline, is particularly noteworthy in this respect. The Dutch government, in 1963, agreed to subordinate its guaranteed obligations of KLM to the other debt of the airline and which remains without any government endorsement. In so doing, the government importantly improved the credit position of the unguaranteed portion of the carrier's debt. (The guaranteed debt endowed the government with a prior claim on the company's assets to the extent of such obligations.) By subordinating such claims, the government also facilitates the issuance of additional debt without any government endorsement on a favorable basis. In a broad sense, the government-guaranteed debt thus becomes an additional "cushion" (along with the equity) for the protection of newly created debt and which lacks the government guarantee.

Tapping Resources Elsewhere

Government support, in one form or another, has permitted many of the national airlines to obtain the necessary funds for equipment purchases in their own countries, as well as major assistance in the U.S. and other world financial markets.

For example, as shown in Section II, the Export-Import Bank, to facilitate American exports abroad, has advanced and/or guaranteed credits to numerous foreign airlines. Such credits were utilized to help purchase U.S.-built aircraft. However, in most instances, these Export-Import Bank loans or guarantees bore the endorsement or guarantee of the governments of the borrowing airlines.

The government guarantee has been an effective device to permit the national airline of one country in Europe to borrow in a neighboring country where funds were available on more favorable terms. (Sabena, with a Belgium government guarantee, sold a bond issue publicly in The Netherlands underwritten by a syndicate of Dutch bankers.)

Moreover, the infusion of government capital into many of these airlines has broadened equity bases to the extent of permitting the carriers to obtain conventional financing, i.e., bank credits without any government guarantees. For example, such carriers as KLM, SAS, Swissair and a few others, at one time or another, were able to obtain loans from U.S. banks on virtually the same terms as U.S. airlines.

Operational "Cash-Flow"

This circumstance was greatly facilitated by cash generation arising mainly from depreciation charges. This factor is highlighted in the revenue and income account summaries for the airlines as shown in Section I. For example, Air France, while showing a nominal level of earnings, has managed a

relatively substantial amount in "cash throw-offs" through depreciation charges. Such "cash throw-offs" from this source have averaged, on an annual basis, in the \$32.5-\$35 million level for the last four years. During the period under review, annual earnings, after depreciation charges, ranged from \$250,000 to \$2.7 million.

This generation of funds from depreciation charges is of major significance as cash so obtained can be applied to reduce previous indebtedness OR be applied toward new aircraft acquisitions. As the scale of operations of all international airlines continues to broaden, with operating revenues to match, the level of depreciation charges and resultant cash throw-offs should assume greater proportions. This circumstance, under normal conditions, should greatly facilitate subsequent financing for additional equipment acquisitions.

Air Union

In 1959, active negotiations were started to form "Air Union," a co-operative airline operation among leading European international carriers through their governments. The participants were Air France, Alitalia, Lufthansa and Sabena. KLM, at various times, also entered the discussions. Various allocations as to traffic, revenues and other elements were tentatively determined. New terms of a proposed agreement were drafted by France in January 1963, and ultimately proved unacceptable to the other participating governments. There were major difficulties besetting these proposals at the outset. The differences were accentuated due to rising traffic, load factors and earnings for the individual airlines

concerned. This consequence diluted the necessity to group together in view of the demonstrated ability for the carriers to show profitability in their present status. Hence, disenchantment was expressed in the definitions of new proposed traffic quotas and the degree of government control indicated for the prospective organization.

Establishment Of Pools

While "Air Union" as a broad-based co-operative effort in the international field appears to be effectively grounded and is unlikely to become airborne, other less ambitious co-operative arrangements have come into being and may broaden in importance. Such co-operative agreements cover pooling of equipment and route operations in specific areas.

For example, KLM, in 1961, inaugurated a co-operation and pool agreement with the Venezuelan airline, VIASA, covering services between Europe and Central America. This agreement was broadened to include the Spanish airline, IBERIA, in 1963, in the same general area. These agreements were renewed in 1964 to continue through 1970. Moreover, KLM has entered into an equipment lease and operating agreement with Philippine Airlines for that carrier on the Pacific, from Manila to Los Angeles.

Other notable co-operative and pool agreements in specific areas include the following:

IBERIA, in 1964, entered into a co-operative agreement with Aerolineas Argentinas to operate the

Madrid-Buenos Aires route under an arrangement of pooling of equipment and income.

Another co-operative arrangement in the making is between Portugal's TAP and Mexico's Aeronaves de Mexico for a joint equipment and pool service between the respective countries.

Early in 1964, Middle East Airlines entered into a co-operative agreement with Austrian Airlines and SAS to pool services and flight equipment on the Beirut-Istanbul-Vienna route, the aim being to reduce over-capacity to and within the Middle East. The arrangement provided for services to be operated initially by SAS crews with cabin staff taken from all three airlines, but for additional capacity to be supplied by MEA and AUA using their own aircraft and crews, the aim being to achieve and maintain a balance in the capacity offered by all three participants. Technical, operation, sales and service activities were also to be co-ordinated.

A broad and unique commercial agreement was developed late in 1963 centering around the multinational Air Afrique, which represents the international airline operations of eleven African countries. Air Afrique has agreed to lease 35 seats and proportionate cargo compartment space for mail, baggage and cargo on Pan American flights on its New York-Dakar-Johannesburg route.

This arrangement has been sanctioned by the U.S. Civil Aeronautics Board and approved by the President. The Air Afrique representation before the

CAB proceeding is significant as to an operating approach and may indicate a pattern to emerge for operations where traffic densities do not initially warrant independent competitive operations. Air Afrique presently owns only two DC-8 jet aircraft used in its current services and does not contemplate that its jets would or could be used in operations to the United States for the next two or three years. It must devote its financial resources to payment for these aircraft, and therefore would not engage in other financial transactions until 1967. The Air Afrique witness testified that a transatlantic operation was a big step; that the carrier did not want to gamble; that it would look at the traffic and gain experience; and that if the volume of traffic appeared sufficient for the operation of the carrier's own aircraft, Air Afrique at that time would procure aircraft and operate independently across the Atlantic.

EMERGING PATTERNS

Basic Assumptions

A financial evaluation of the capability of foreign airlines to acquire SST aircraft must presume that emerging supersonic jet aircraft will be economically acceptable. To meet this economic test, the SST must be able to operate at a seat-mile or ton-mile cost at least as efficient as that prevailing for the current generation of subsonic jet transports. Meeting this requirement will greatly facilitate the

abilities of the major individual foreign airlines to obtain the necessary financial support to justify purchase of SST aircraft. This consideration, however, may be tempered somewhat by the practical need to meet pressures arising from a competitive airline placing an SST in regular passenger service -- regardless of the economics of the aircraft's operations.

Broadening Support

As indicated, the individual foreign airlines have attracted varying forms of substantial financial support from their sponsoring national governments.

The capital bases of these airlines have broadened considerably throughout the years as a concomitant of steadily enlarging operations. Having successfully met the escalated unit cost of aircraft from around \$100,000 per copy for the DC-3 in 1936 to more than \$6 million for a current-day subsonic jet (DC-8 or 707), the individual foreign airlines have developed the financial resources to support operations at present levels. Moreover, it is a fact of airline life, that to a large extent, the economics of the jets have made it possible to arrange their underlying financing.

Dependence Upon Governments

Nevertheless, as previously shown, the "cash throw-offs" through depreciation charges and as successfully covered by operations have given the

individual airlines the means to help finance additional acquisitions. However, in a strict sense, funds for replacement equipment purchases can be developed only to the extent of depreciation cash currently being generated. Hence, the acceleration in the purchase price of an SST to the \$30-40 million area as contrasted to the \$6-8 million level per copy for a subsonic jet type would place quite a strain on the financial resources of these individual airlines.

Accordingly, under these circumstances, in the final analysis, the decision to purchase SST aircraft will rest with the sponsoring governments.

The separate governments will thus be faced with a hard determination as to whether or not further additional financial outlay in the interests of their national airlines can be justified.

The evaluations will entail considerations as to the individual country's capability to sacrifice its national resources solely for prestige reasons -- if the SST aircraft is to be an uneconomic operation. On the other hand, all sponsoring countries benefit, in differing degrees, by virtue of their national airlines' operations. Employment is stimulated in the home country, directly and indirectly, by a national airline's operations. Moreover, resulting supporting capital expenditures in the country itself add to the gross national income. Further, trade and the foreign commerce of a country can be said to be broadened by the services of a country's airline, thus additionally augmenting national income.

SUPPORT FOR POOLS

The cost, speed, capacity and utilization factors of the SST may well dictate an intensification of the "pooling" feature which has attained considerable acceptance in recent years.

In this context, a forward look is required as to the likely form of the various bilateral air agreements governing operations between the various countries involved. This pertains particularly with "fifth" and "sixth" freedom traffic rights. (The "fifth" freedom is the right to fly into the territory of the grantor State for the purpose of taking on, or discharging, traffic destined for, or coming from, third States. The "sixth" freedom, which is very controversial, is the right to fly into the territory of the grantor State and there discharge, or take on, traffic ostensibly coming from, or destined for, the flag-State of the carrier which the carrier has either brought to the flag-State from a third State on a different service or is carrying from the flag-State to a third State on a different service.)

With the very high productivity of the SST plane, many foreign airlines may have difficulty in generating sufficient traffic to and from their own countries to support sufficient equipment utilization to justify a minimal SST operation.

Impediments in U.S. Financing Assistance

As detailed in Section II, the U.S. capital markets have been a prime source for foreign airlines to obtain funds with which to finance their aircraft purchases. The Export-Import Bank of Washington has been a major factor in this respect and its efforts continue to receive the strong support of U.S. aircraft manufacturers for obvious reasons.

In addition, wherever individual foreign airline credit circumstances warranted, U.S. commercial banks have helped to finance aircraft acquisitions of these carriers.

Under normal circumstances, the U.S. capital markets may be expected to continue to finance aircraft purchases by foreign airlines.

Such "normalcy," however, was altered by the passage and signing into law of the Interest Equalization Tax Act in mid-1964, but retroactive to July 19, 1963. This measure imposes a tax on "each acquisition by a U.S. person of stock of a foreign issue, or of a debt obligation of a foreign obligor if such obligation has a period of maturity to three years or more." The tax on the acquisition of a debt obligation of a foreign obligor ranges from 15% down to 2.75% of the actual value of the debt, depending upon the maturity.

This Act is designed as a "temporary" measure to help correct the adverse balance of payments

conditions prevailing for the United States. However, a distinct possibility exists that this Act will probably continue on the statute books for some time to come.

Under such circumstances, foreign airlines, excepting those in Canada, as a practical matter may find the cost of obtaining capital in the U. S. market prohibitive.

The Export-Import Bank, as an instrumentality of the United States is not bound by the provisions of the Interest Equalization Tax Act. However, its activities in this respect may be inhibited in guaranteeing loans representing a percentage of the over-all financing in which it participates. As previously indicated, the Bank's loans or guarantees in the recent past have involved from 60 to 80 percent of the total cost of the contracted equipment purchases made by the individual foreign airlines involved. The balance was frequently obtained through general loans from U.S. commercial banks. Such general loans (beyond three years) in the future will bear the added cost arising from the Interest Equalization Tax Act as long as that measure is in effect. This added burden may preclude obtaining the balance of these funds from U.S. commercial banks as required to provide the necessary margin to permit Eximbank's loan participation.